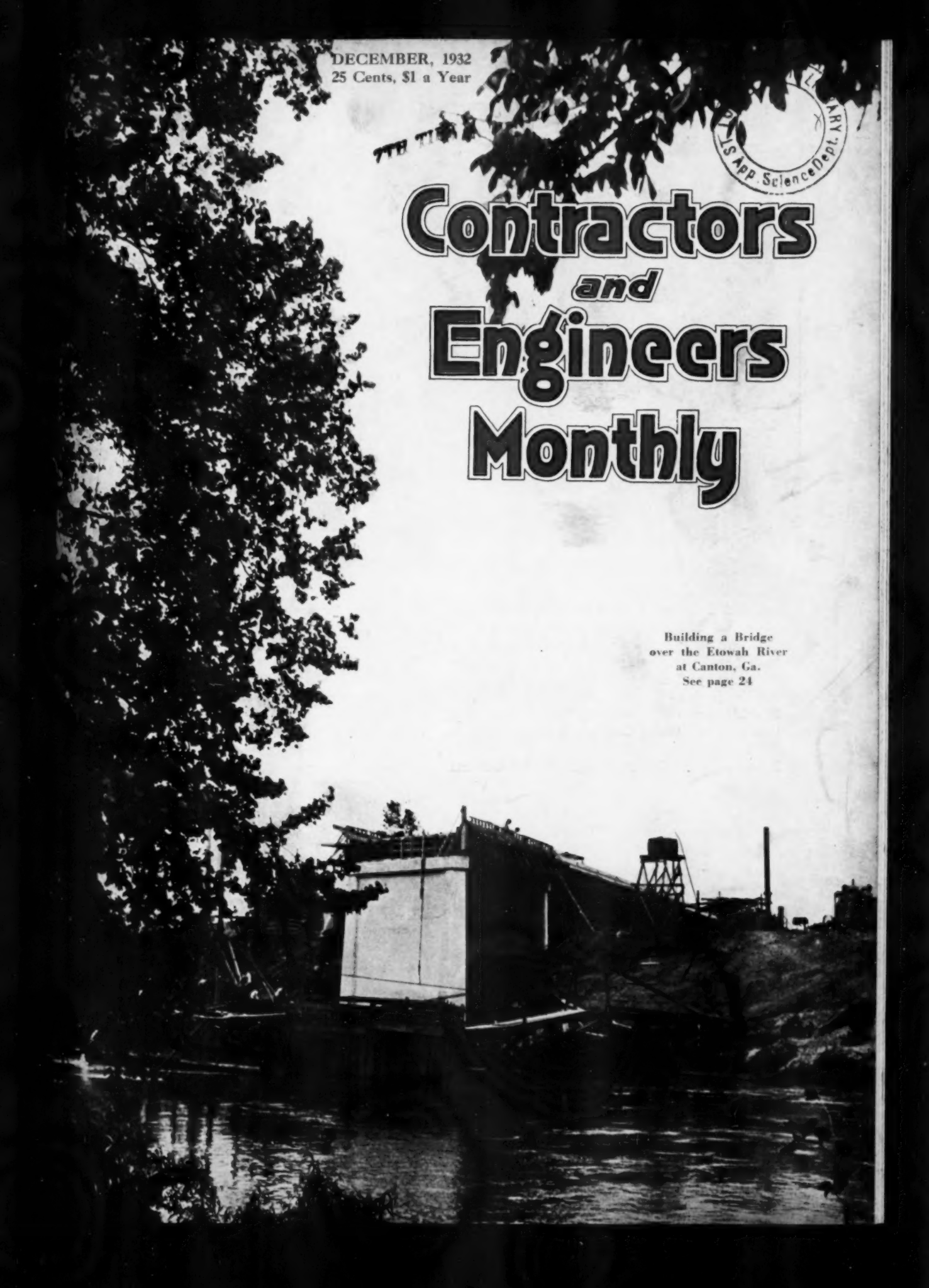


DECEMBER, 1932  
25 Cents, \$1 a Year



# Contractors *and* Engineers Monthly

Building a Bridge  
over the Etowah River  
at Canton, Ga.  
See page 24



# You can't build long life into a Culvert...



# ...unless there's long life in metal from which it is made . . . . .

**T**HAT'S axiomatic. The old story of the silk purse and the sow's ear. For almost a quarter of a century culverts made from GOHI 99.90% Pure Iron-Copper Alloy have been giving an in-the-ground performance that is unequalled.

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No. 353



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THREE SIZES FOR  
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Accurate control of materials to comply with any  
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And here's another fact that'll make your expense account beam with gratitude—it costs only \$1 a day more for two persons at the Lexington. A room which is \$3 for one, for instance, is only \$4 for two persons.

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## *The* **ROPE BUILT ESPECIALLY FOR THOSE TOUGH JOBS**

You'll cut plenty of cost out of those jobs if you use WilliamSPORT—the wire rope with the reputation for uniformly high quality.

Paying more for wire rope than WilliamSPORT asks is just an extravagant waste of money. Get our prices; send us your specifications and tell us your problems. We can and will help you.

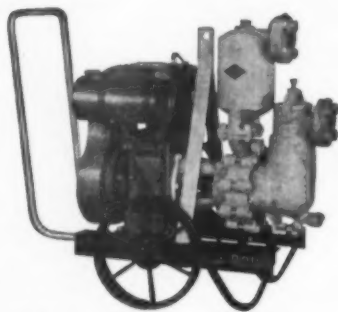


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*General Sales Offices*  
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*Descriptive Catalog  
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The location was a swamp—with a cut seventeen feet deep—all wet. Pre-draining by the use of a Moretrench Wellpoint System was just plain horse sense. Wherever the System goes in—the water goes out and dry digging follows.

The Moretrench Wellpoint System makes DRY ONES out of WET ONES, any time, anywhere, and under any condition.

**MORETRENCH CORPORATION**

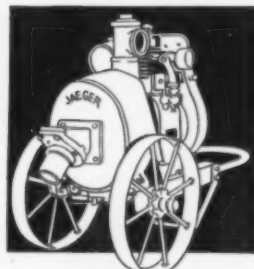
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MIXERS 3½ S to 84S.  
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## HERCULES The Modern Road Roller

There's a Hercules for Every Job  
THE HERCULES COMPANY, MARION, OHIO

# A REJUVENATION

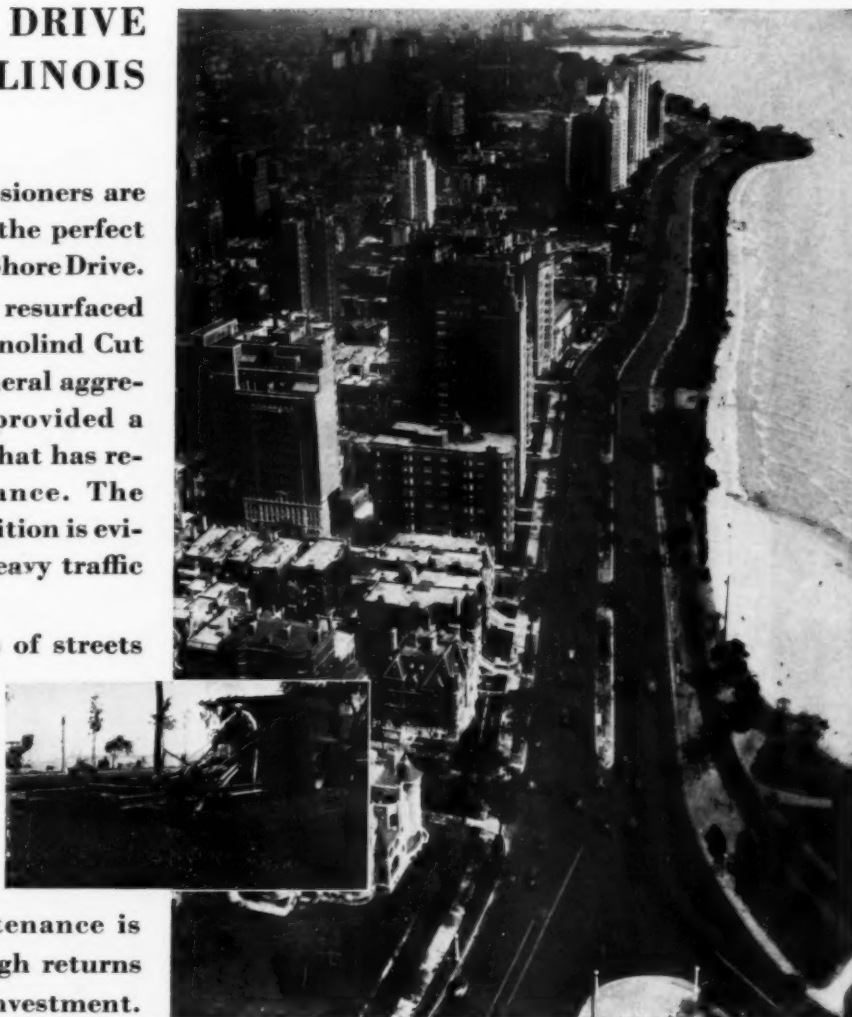
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### LAKE SHORE DRIVE CHICAGO, ILLINOIS

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The west drive was resurfaced early in 1930 with Stanolind Cut Back Asphalt and mineral aggregate. This method provided a smooth even surface that has required no maintenance. The present excellent condition is evidence that it meets heavy traffic requirements.

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STANDARD OIL COMPANY

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32 Mechanics Avenue Woonsocket, R. I.

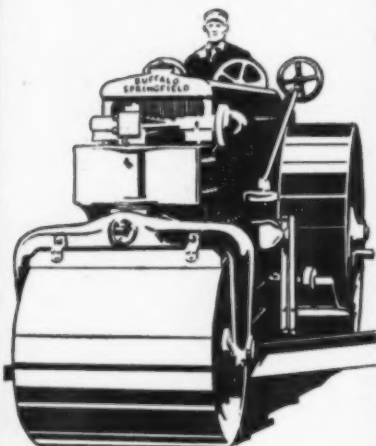
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Leadership is usually of short duration. Champions come and champions go in never-ending procession. Not so of the Buffalo-Springfield roller. It has held its rating as the premier roller for decades—is the leader today—will still be, we pledge you, the best roller a generation hence.

Three wheel and tandem models, steam or motor driven. All practical sizes and weights. Scarifier and other attachments, as desired.

The Buffalo-Springfield Roller Co.  
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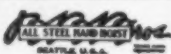
Other advantages:

A perfect heating system; and low cost of operation.



Send for full details on the ETNYRE line of distributors.

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CAPACITY  
5 TONS  
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Weight  
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Price \$75 F. O. B. Warehouse Points  
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Write for descriptive circular with users' endorsements and name of nearest dealer.

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PULLSHOVELS—SKIMMERS—DRAGLINES  
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giving complete information.



# WALLS OF STEEL



*Carnegie Steel Sheet Piling in foundation  
of Gulf Building, Pittsburgh*

**F**OR all types of foundation work, particularly where adjoining foundations and streets must be protected, walls of steel sheet piling are highly efficient. A wealth of experience in the use of piling makes the services of Carnegie engineers of real value to you in the solution of your problems. Feel free to take advantage of their services.



## CARNEGIE Steel Sheet PILING

*Product of CARNEGIE STEEL COMPANY, Pittsburgh, Pa., Subsidiary of United States Steel Corporation*

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# LIFT OUT IDEAS



by the Bucketful  
from  
**Contractors  
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Engineers Monthly**

In these days of keen competition it pays to know a little more than the other fellow.

## IS YOUR WORK ALONG ANY OF THESE LINES?

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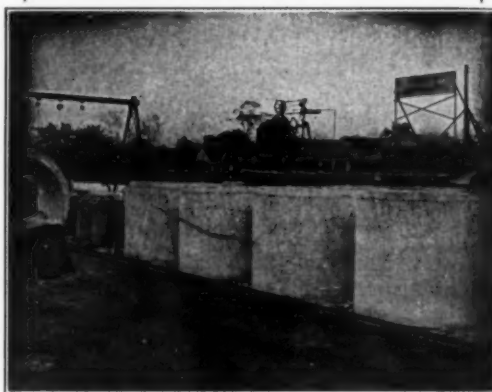
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STREET AND NO.....

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REINFORCED CONCRETE PIPE  
*"It makes a better joint"*

**Easily laid at  
small expense  
with perfect  
flow line.**

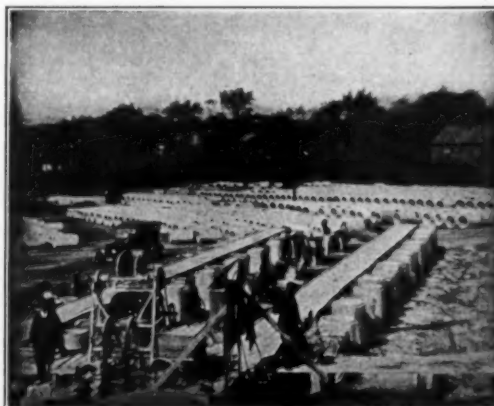


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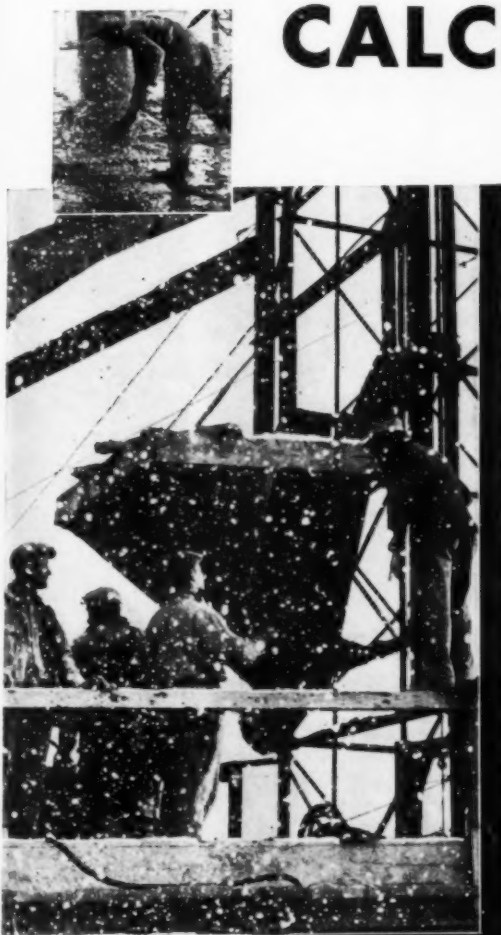
Newark

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# For Cold Weather Construction Put **CALCIUM CHLORIDE**

## In Every Mixer Batch



**D**ON'T confine your use of Calcium Chloride to zero weather. You need it every day, in every batch, from autumn until spring.

Concrete hardens slowly when the thermometer goes down. Calcium Chloride accelerates the rate of hardening of concrete when used integrally. As a part of the mix it produces high early strength in the mass which is a definite factor in offsetting the effect of low temperatures.

Use your regular protective measures, of course, then take advantage of the additional protection of Calcium Chloride. It will permit earlier release of forms and equipment. It is an aid in continuous finishing.

Get full data now on the use of Calcium Chloride in concrete.

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FOR SAFE YEAR 'ROUND CONCRETE CONSTRUCTION

# RESERVE STAMINA!



WATCH this rugged "Caterpillar" Tractor heave mightily against the bulldozer—and push the rock pile steadily aside. Such heavy-duty work is a tremendous test of strength and stamina—which "Caterpillar" engineers have anticipated! Ample weight is provided in the "Caterpillar" Tractor—to balance the power of the sturdy engine, and to match the positive traction of the broad, stout tracks. Over-sized parts of heat-toughened alloy steels are designed to resist the shocks and stresses imposed by the heaviest loads the "Caterpillar" Tractor can move!

"Caterpillar" track-type Tractors are built to take the toughest assignments. That's why so many dirt-movers and road-builders rely exclusively on "Caterpillar" performance!

**Caterpillar Tractor Co., Peoria, Ill., U.S.A.**  
Track-type Tractors      Combines      Road Machinery  
(There's a "Caterpillar" Dealer Near You)

Prices—f. o. b. Peoria, Illinois

FIFTEEN . . . . .	\$1100	THIRTY-FIVE . . . . .	\$2400
TWENTY . . . . .	\$1450	FIFTY . . . . .	\$3675
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DIESEL . . . . .			\$6500

## CATERPILLAR

REG. U. S. PAT. OFF.

## TRACTOR

During December we hope you will remember to mention CONTRACTORS AND ENGINEERS MONTHLY.



# Belt Conveyor System Builds Levee Enlargement



## *New Method of Construction*

*Used by  
Lynch Bros.  
at Farrell, Miss.*

**T**HERE may be nothing new under the sun but there are always new applications of equipment of known value. A few years ago when Seattle, Wash., was performing its remarkable "from the mountain to the sea" movement and making for easier motor traffic through the city by eliminating one of the larger hills and at the same time creating a fine new waterfront area, belt conveyors did the trick. Believing that this same system might prove economical and satisfactory in levee building, Lynch Bros. of Chicago, Ill., placed a complete Link-Belt conveyor system on its job at Farrell, Miss. With this system a continuous stream of dirt was carried for a distance of 1,000 feet with one handling. Rehandling is the bane of the levee contractor's existence. If dirt must be handled more than once the price goes up and if the dirt is handled several times, it seems to have the faculty of disappearing.

## OUTLINE OF THE SYSTEM

This system of levee construction consisted of a spreader conveyor mounted on crawlers and capable of turning the same as a dragline, to the hopper of which a stream of dirt was delivered from a conveyor on top of the levee. To this top system a series of conveyors of varying lengths carried dirt from two feeder conveyors which were placed in different positions to handle the material most expeditiously and over as wide an area as possible. The dirt was excavated by two draglines and dumped into the hoppers of two feeders which delivered the intermittent loads to the feeder conveyors as continuous streams of dirt.

The spreader unit consisted of a crawler-mounted body, free to swing in the same manner as a dragline and equipped with a 50-foot boom, carrying a 36-inch belt conveyor running at 500 feet per minute. This spreader delivered the dirt in a projectory to any point within its radius. This dirt could be piled up for later spreading in thin layers with other equipment, but on this operation the dump foreman laid down the dirt so that the levee was complete as built except for the dressing with two 3-up mule teams and fresnos. All dressing was done on the day shift.

The top conveyor which was 200 feet long carried a 36-inch belt operating at 500 feet per minute. This conveyor was mounted on small flanged wheels running

on 20-pound rails and was propelled by a hand winch as it was necessary to move it along. The push button switch that operated the entire conveyor system was located at the head end of the top conveyor so that the foreman could stop and start the entire system instantly. The starting was handled through a system of relays so that each unit from the spreader back to the last loading hopper started a few seconds after the conveyor ahead to prevent piling up of the material. The last 25 feet of the top conveyor was cantilevered and rose at a slight angle to deliver the dirt in a projectory to the hopper of the spreader. This hopper was about 10 feet square.

The slope conveyor and the leader conveyor were identical in size, each being 100 feet long with 42-inch belts running at 350 feet per minute. These two provided very easily-handled flexible units which could be jack-knifed to take up any slack in the total distance of the end of the last feeder conveyor and the top conveyor. Thus they were operated either in a straight line as one extreme and at an acute angle to each other as the other extreme.

The two main conveyors were each 300 feet long and carried 42-inch belts running at 350 feet per minute. These conveyors, as with all others except the top conveyor and the spreader, were mounted on boiler head pans or skids like gigantic "domes of silence" rounded to slide readily over rough ground. For moving, the conveyor trusses were provided with  $\frac{3}{4}$ -inch spreader cables at 20-foot intervals so that the draglines could pick them up and pull them easily either lengthways or sideways.

The two feeder conveyors were each 250 feet long with 42-inch belts running 250 feet per minute. To permit continuous feed of the intermittent loading of the draglines there were two feeder hoppers, one for each dragline, with an 8-foot square hopper having a manganese apron conveyor in the bottom operating at 175 feet per minute. The large lumps of sandy clay were readily broken down in these feeding hoppers and fed out to the feeder belts at a uniform rate so that the entire belt system carried a practically uniform load of dirt.

The two draglines which handled the dirt from the pit to the loading hoppers were Link-Belt machines, one a K-48 with a 45-foot boom and a 2-yard Omaha bucket and the other a K-44 with a 45-foot boom and a  $1\frac{3}{4}$ -yard Omaha bucket. The K-48 was equipped with a Waukesha engine and the K-44 with an Atlas diesel engine. It is believed by the contractor that the draglines would have operated a little more efficiently on this system with shorter booms which would have permitted a faster swing. With the system as operated the draglines extended the pit to about 30 feet beyond the extreme end of the feeder conveyors. While the dirt went from dragline to hopper and thence from one conveyor to the next and finally into the levee, it was in reality handled but once as the system operated as one unit. Further, no dirt was lost on the way as the delivery from one conveyor to the next was so arranged with hoppers that there was practically no spillage. Occasionally a large lump of buckshot would roll off the conveyor, particularly the slope conveyor, but this was the exception rather than the rule.

#### ELECTRIC DRIVE THROUGHOUT

The conveyor system was driven by electric motors throughout. A total of 225 horsepower was required to operate the conveyors through a silent chain drive which required remarkably little maintenance in spite of the alternate mud and dust encountered. Electric power was purchased from the Mississippi Light & Power Co. at 440 volts, 50 cycles. A  $1\frac{1}{2}$ -mile power line was required to carry the current to the job. The high power line was carried at 2,200 volts which was stepped down in a transformer at the power take-off. The transformer was mounted on skids so that it could be moved readily whenever the conveyor system was carried forward to build another 400-foot section of levee.

One of the secrets of the low power consumption of the system was the careful greasing of the idlers which carried  $1\frac{1}{4}$  pounds of grease in the grease reservoir. This amount carried the system for six to eight weeks between greasings. The conveyors ran two 11-hour shifts, allowing 2 hours for greasing the equipment and going over the entire system for maintenance and adjustments.

#### LABOR ORGANIZATION

The labor organization required to operate any new system of dirt moving is always of interest for purposes of comparison with existing systems. The labor required for the conveyor system consisted of an operator and oiler on each dragline; one man who watched the two feeder hoppers; two men on the conveyors watching for large roots and any possible sticking of the buckshot in the hoppers; one boy picking out roots on one of the main conveyors, and then on top; a dump foreman who swung the spreader, a spotter who leveled off the humps and directed the Caterpillar Sixty and bulldozer in its work of finishing, and two track men for the top conveyor. There was in addition an expert electrician and the Superintendent. Another Link-Belt dragline, a K-30, also equipped with a Waukesha engine, worked ahead of the conveyor system making trackway for the top conveyor and doing other necessary work.

#### LIGHTING FOR NIGHT WORK

As this job was operated practically 24 hours a day it was necessary to have adequate illumination in the pits for the draglines and along the conveyors and at the dump on the levee. From two to four General Electric open-type floodlights with 1,000-watt lamps were used in the pits and four to 6 units with 250-watt lamps on the dump. No additional wiring was necessary as the power line was carried along the side of the conveyor trusses.

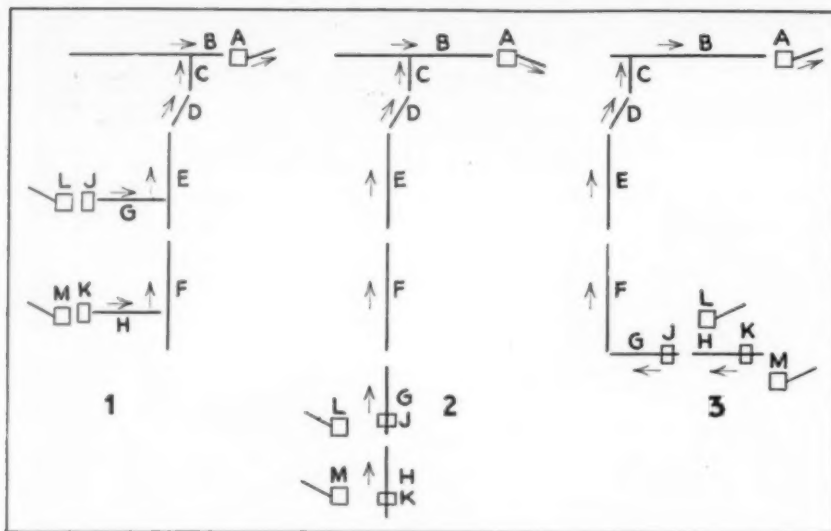
#### SEQUENCE OF OPERATIONS ON ONE SET-UP

The progress of the set-ups of the conveyor system is shown in the series of diagrams accompanying this article and these most clearly show the scheme behind the operation of the belt system. It was the endeavor of the operators always to handle the dirt forward to the spreader and thus when a move of the entire system was made the borrow pit was always even with the starting position of the top conveyor. This is shown in



#### HANDLING DIRT WITH DRAGLINES AND BELT CONVEYORS

1. Loading one of the hoppers at the extreme end of the conveyor system. 2. The loaded feeder belt at right angles to one of the main conveyors. 3. One of the main conveyors delivering to the leader conveyor and showing a slope conveyor in the foreground. 4. A distant view of the slope and top conveyors. 5. A close-up of the boiler head pans which permitted easy movement of the conveyors to new set-ups. 6. Night illumination was furnished by large and small electric floodlights.



Diagrams  
of  
Three  
Set-Ups  
of the  
Conveyor Units  
on the  
Lynch Bros. Job

comparing the positions of the spreader and the draglines in all three diagrams.

#### DETAILS OF THE CONVEYOR UNITS

Unit	Length	Width	Speed per Minute
A—Spreader	50 feet	36-inch	500 feet
B—Top conveyor	200 feet	36-inch	500 feet
C—Slope conveyor	100 feet	42-inch	350 feet
D—Leader conveyor	100 feet	42-inch	350 feet
E—Main conveyor	300 feet	42-inch	350 feet
F—Main conveyor	300 feet	42-inch	350 feet
G—Feeder conveyor	250 feet	42-inch	250 feet
H—Feeder conveyor	250 feet	42-inch	250 feet
J—Feeding hopper	8 feet	8 feet	175 feet
K—Feeding hopper	8 feet	8 feet	175 feet
L—Dragline, Link-Belt No. K-48 with 45-foot boom and 2-yard Omaha bucket			
M—Dragline, Link-Belt No. K-44, with 45-foot boom and 1½-yard Omaha bucket			

Diagram 1 shows a normal set-up for starting the work with the slope conveyor feeding to the top con-

veyor near the delivery and the lead and slope conveyors at a slight angle to each other to carry the dirt around an obstruction. The two feeder conveyors were located to the left of the main conveyors, securing dirt at a maximum distance of 280 feet from the main conveyors. When the pit was excavated to the maximum depth allowed with this set-up, the next move was to extend the main conveyors by adding the two feeder conveyors to the end of the main conveyors, thus making it possible to load at a maximum distance of 1,330 feet from the center line of the top conveyor which rode the center line of the crown of the levee. Thus set-up is shown in Diagram 2.

The next extension of the system was to move the two feeder conveyors around at right angles to the



The Distributing Belt Conveyor Boom on the Dixie Construction Co. Job at Sherrard, Miss.



main conveyors and in the direction in which construction was progressing. This is shown in Diagram 3. It will be noted that the end of the last feeding conveyor was not permitted to extend beyond the point where the top conveyor delivered material to the levee. This was so that the system would always be self-supporting in so far as the material was concerned and not require the hauling of dirt to the feeding hoppers from a point beyond the reach of the draglines. The pits began at a point 400 feet from the toe of the levee and were dug on a 1-foot in 50 slope, making an average cut 6 feet in depth.

A fourth position of the conveyors, which is not shown in a diagram, was similar to that shown in Diagram 1 except with the feeder conveyors on the right instead of the left of the main conveyors.

#### PERSONNEL

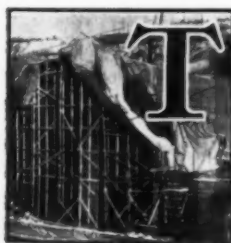
This contract for one mile of levee enlargement

amounting to about 650,000 yards of dirt was awarded to Joseph B. Turner of Birmingham, Ala., for 20 cents per yard. Lynch Bros. of Chicago, Ill., were subcontractors on this job. The contract was equipped and operated by the Link-Belt Co., of Chicago, Ill., with George W. Talbot as Superintendent in charge. For Lynch Bros. the work was under the direction of Leo Lynch, President, and James Lynch, Secretary and Treasurer. For the Memphis Engineer District, U. S. Engineer Corps, Major Brehon Somervell was in charge as District Engineer, with Burton Renager as Inspector in the field.

EDITOR'S NOTE: Since the Lynch Bros.' contract went into operation, another Link-Belt conveyor system has been put into service on the Dixie Construction Co.'s 1,200,000-yard levee contract at Sherrard, Miss. There are over 1,000 feet of belt conveyor in this unit, all track mounted for mobility. Material is dug by Link-Belt 2-yard draglines and fed to the belts by means of traveling grizzlies capable of breaking down lumps of buckshot if encountered. Delivery to any desired point in the levee is accomplished by means of a bridge-mounted swinging-boom belt conveyor. This system is handling the material in a continuous stream from the draglines at the borrow pit 1,000 feet away at the rate of 150 yards per hour. The distributing belt conveyor on this contract is shown in the illustration.

# Winter Construction

## Part III—Steel Construction



THROUGHOUT the twelve months of the year steel construction proceeds in all climates and in all latitudes. It is not found necessary to take any extraordinary precautions because of the varying seasons of the year, as steel can be erected any time, any where as long as men can work. This

has made possible remarkable progress in certain fields where such connecting links as viaducts have been constructed during the winter and were ready for concrete paving in the spring at the time work was undertaken on the road itself. In most structural steel work on buildings, the steel workers are afforded protection by the erection of wind breakers and the installation of salamanders to provide some heat within the structure to temper the cold. Every endeavor is made to carry brick work up as rapidly as possible within enclosures of canvas and frame construction, thus protecting carpenters and plasterers in their work.

In Illinois on a school structure the contractor reports

*A Symposium Covering Expense,*

*Excavation and Grading,*

*Steel Construction,*

*Handling and Heating of*

*Aggregate*

*and Protection of*

*Concrete*

that the work was stopped on all days unsuitable for steel work but that only about ten days were lost because of bad weather during the entire winter. An Iowa contractor who put through two river bridge spans in the winter where there was no chance to protect the labor was exceptionally fortunate in that the winter was unusually warm for that territory and consequently there was no suffering among the workers.

A Seattle, Wash., contractor working in Montana states, "We used two smudge pots between steel workmen on the scaffolding. The men got so close to the pots when the temperature dropped to 10 degrees below zero that their trousers caught on fire."

# Paving

*Through the*

## Michigan Sand Dunes



EARLY 1,000,000 cubic yards of sand was moved by two subcontractors to clear the grade for 11.33 miles of the 18-mile concrete boulevard along the shore of Lake Michigan running south from South Haven. The grading was started October 15, 1930, and continued practically all

winter with some night work by one of the grading units. Gould & Cross, of Grand Rapids, Mich., worked by carbide flares set along the work at night as the hauls were not long. Their Northwest shovel was equipped with an electric plant and headlights, making the work as light as day for the operator. This same outfit also had three house wagons for its men lighted with a portable electric plant.

Pickett & Goodwin of Allegan, Mich., were also subcontractors on the grading. The third contractor on grading was Woodley Brothers, of Benton Harbor, Mich., who used Western crawler wagons and a P & H shovel. The shovels and hauling equipment which were used by the three subcontractors to rush this excavation through included a 10-yard Smith, an 8-yard Euclid, and a fleet of 5-yard Western crawler wagons, some five or six Koehring Dumpsters and other equipment without crawler treads. The crawlers proved their value as every piece of machinery not so equipped was taken off the job.

There were, for excavating equipment, a P & H 1-yard shovel, four Northwest  $\frac{3}{4}$  and 1-yard shovels, one Northwest crane with a 1-yard clamshell bucket, an Erie  $\frac{3}{4}$ -yard steam shovel, and a Lorain  $\frac{3}{4}$ -yard gas shovel. The steam shovel had two Freeman four-wheel-drive trucks and four Model A Ford trucks hauling from it and three Relay trucks hauled from the Lorain gas shovel. This outfit worked at the north end of the job where there was some earth and not a predominance of sand. The deepest cuts on the job toward the south end ran as high as 56 to 60 feet at the side with others of 40 and 50 feet, while the fills ran as high as 30 and 40 feet.

### MUCK HOLES BLOWN OUT WITH DYNAMITE

All the muck holes on the job were treated similarly

to get rid of the unstable material. First a trench was shot along the line of the right of way and 20 feet to either side of the center line of the fill. A fill was then put in to about 7 feet above the final grade, 2-inch pipe was driven through the surcharge into the muck and two sticks of dynamite exploded to form a chamber. Then the hole was loaded with about 30 sticks and shot. The holes were spaced about 10 feet apart and were about 20 feet out from the center line of the fill. A well driller was used to drive the pipe, using a metal plug in the lower end of the pipe instead of the usual wood plug for this type of muck work. The metal plug cut through old logs and other obstructions where the wood plug would have simply splintered. The plug was shouldered to fit the end of the pipe, giving added strength to the driving end.

If the major blasting did not show satisfactory, a third drilling and blasting was resorted to with the surcharge carried about 5 feet above the finished grade. Throughout this work du Pont 50 per cent dynamite was used and the holes shot with a No. 3 du Pont blasting machine.

### SEVERAL LARGE CULVERTS INSTALLED

There were a large number of small pipe and box culverts on this project but the three large 8 x 12-foot culverts required the major attention. These had 500, 900 and 1,300 cubic yards of concrete respectively. The largest of the three culverts was a twin barrel unit 178.9 feet long and on a 70-degree skew. It required 714 piles in the foundation, driven to depths of about 15 feet. There were 1,280 cubic yards of concrete and 245,000 pounds of steel. The culvert eventually carried a 30-foot fill.

### TWELVE-CAR INDUSTRIAL RAILWAY TRAINS USED

All of the hauling for the paver was handled by 12-car trains on an industrial railway as the use of trucks would have been impossible. There were four locomotives for trains, two boosters and one for handling the cars of aggregate at the batcher plant. There were four old Burton gasoline locomotives, two Whitcombs, one Plymouth and one Milwaukee, all 7-ton units.

The track at the yard was divided with a siding switch and also two spurs leading to the repair shop and for storage. Another spur ran alongside the standard

## *Industrial Railway*

### *Made Paving Possible*

### *Through Loose Sand*

### *Where Trucks Would Mire*

gage railroad spur where the aggregate cars were spotted. When it was time to shift them one of the spare industrial locomotives was used with a steel cable to move the empty along and the next full car into place.

The yard was equipped with a blacksmith shop and a tool shop where most of the usual repair and overhauling jobs occurring on a construction job could be handled. There were a blacksmith and two mechanics in the yard for this type of work. They overhauled a Caterpillar tractor and made numerous repairs to the industrial equipment.

#### UNLOADING AND BATCHING THE AGGREGATES

During normal operation the batching plant handled about fifteen cars of aggregate a day. Both sand and gravel were shipped in by rail by the Grand Rapids Gravel Co. from Grand Rapids, Mich. The sand came in gondola cars and was clammed out by the Marion steam crane with a  $\frac{3}{4}$ -yard Hayward bucket. Two men were kept in the cars to clean up by hand. The gravel was delivered in hopper-bottom cars and was emptied into a pit beneath the track and handled from

there by the same outfit to the wood bins over the four Johnson batchers or to the stockpiles. There were two batcher men, one for the two stone and one for the two sand batchers. The batches of aggregate for the 6-bag mix contained an average of 1,155 pounds of sand and 2,253 of gravel.

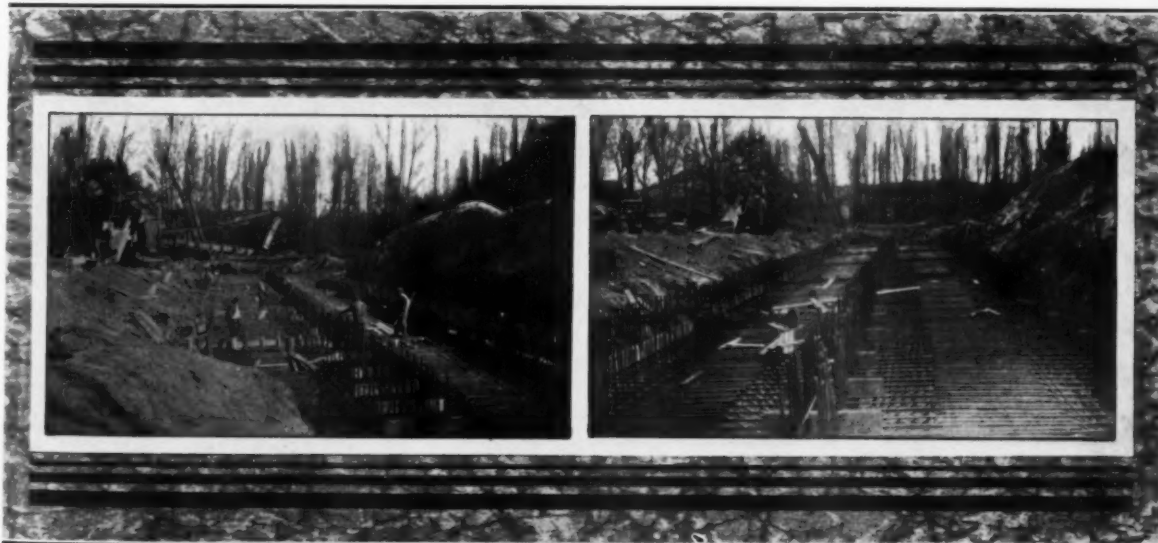
The 12-car trains with the locomotives at the far end ran through under the batchers and then spotted the pairs of boxes on each car under the twin batchers so that two boxes received the aggregate of like kind at the same time and the next pair the other aggregate at the same time. This minimized the loading of the trains which arrived at intervals of from fifteen to thirty minutes.

The locomotive then backed and carried the train to the cement dock where the cement crew had the six bags of cement for each box properly spotted and ready to empty. The cement was hauled out from the car by hand trucks and then opened and the sacks set up at the right spacing so that when the train came in and was spotted it was only necessary to step aboard the train and empty the sacks directly from the dock. There were six men in the cement dock and one man to bale the cement sacks that were tossed to the side opposite the dock as emptied.

As the only reliable means of communication between the plant and yard and the paver and grade was through the industrial railway all supplies for the road were carried out on the trains. During the hot weather one of the most important was the haulage of drinking water for the men. Three 5-gallon cans were carried back and forth continuously but still there never seemed to be quite as much water for the road gang as they wanted to drink. Gasoline for the paver and finishing machine were also hauled out by the industrial trains.

#### FINE GRADING IN FINE SAND

One of the customary pieces of equipment that is al-



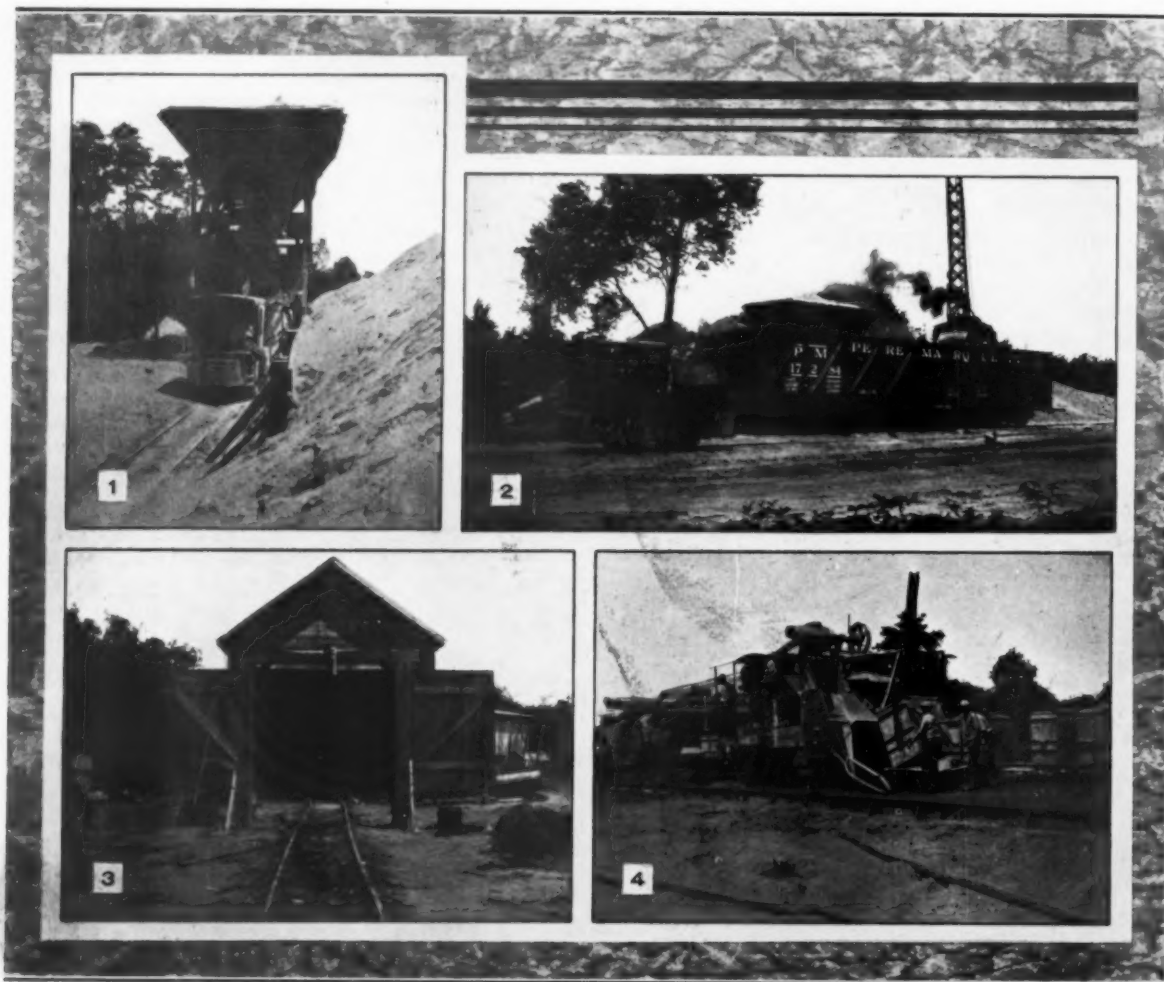
#### CONSTRUCTION OF A TWIN 12 x 8-FOOT BOX CULVERT BY BARDEN & WEST, SUBCONTRACTOR

The steel is shown in place, ready for the footings to be poured. Because of the size of this culvert the top and bottom slabs were divided into five sections. The photographs show the farthest section poured and bulkheads in place for the remaining sections. This culvert was poured with the Koehring 21-E paver shown.

ways looked for on the fine grade is the power roller. The puffing steam roller or its newer counterpart, the chugging gas roller, was entirely missing on this job for the sand was compacted solely by wetting down with a stream of water. The roller was used for a short stretch on the northern section of the job where there was some earth in the grade, and also to complete the shoulders which were made unusually wide because of the possibility of this road being widened later to a 40-foot pavement. The job carried a 4-foot shoulder of rolled  $\frac{3}{4}$ -inch gravel for the entire length on both sides laid to a depth of 6 inches. In the sand section, which extended through most of the project, outside of the gravel shoulder was another of like width and thickness of clay and outside of that 2 inches of top soil carried out to the limits of the eventual 40-foot pavement. This protection was necessary, for any motor vehicles turning off the pavement onto the sand would have instantly been completely mired in the sand, as the Editor knows from sad experience on this job. This road running parallel to the shore of Lake Michi-

gan, and almost never more than one-quarter mile from it, is bound to be a popular one for the large and growing group of Illinois and Indiana bathers who come north in large numbers during the summer, many of whom are one day visitors, parking their cars just off the pavement and going to swim nearby. Without the effective shoulder protection this stretch would become a gold mine for the towing fraternity.

While we are discussing this phase of the work it is well to call attention to the remarkable fertility of the soil of this section which twenty years ago supported one of the finest groups of orchards in the entire country. The fine "blow sand" came in from the lake shore and smothered the entire section for a distance of 4 miles back from the lake. Thus this new road may restore the value of the land but in an entirely different way. To protect the road and the adjacent country where deep cuts have been made or fills piled up in the construction of this highway, all slopes were sodded, including the ditches. In 11.33 miles of right of way there were used 175,161 square yards of sod and 25,000



PLANT AND METHODS USED BY THE HERSEY GRAVEL CO. WHILE PAVING ALONG THE SHORES OF LAKE MICHIGAN

1. Loading a train of batch boxes at the batching plant. 2. One of the gasoline dinkies was used for shifting the aggregate cars. 3. The workshop where both gasoline locomotives and crawler tractors were overhauled. 4. Handling a batch box at the paver.



cubic yards of top soil.

On the fine grade ahead of the paver and after the heavy grading equipment of the subcontractors had completed their work, there were twenty men who also laid all the switches, track and water pipe lines. Of these, three men set the Blaw-Knox 8 and 9-inch steel forms for the 20-foot uniform section pavement. The remainder of the fine grade crew hand shoveled to or from the grade as shown necessary by the fine grade template which was pushed ahead as soon as the forms were set.

#### POURING CONCRETE IN SAND

As sand is most compact when wettest the only preparation of the grade immediately ahead of the paver was wetting down, a job which was handled in an excellent manner by the youngest member of the organization. There were three men handling the batch boxes from the cars and dumping them into the skip of the Rex 27-E paver. On the paver were the hoist man for the boxes and the paver operator. Two tail graders cared for the final grade by shoveling to and from the drag template pulled by the paver. There were four puddlers who also shoveled to the strike-off of the Ord finishing machine, two steel men who were permitted to walk into the concrete in setting the steel because of the "clean" nature of the soil on the grade, the finishing machine operator, and two hand finishers. These men used the two long-handled floats, the straight-edges, and a 14-inch canvas belt with an arched wood top to keep it taut. Following the finishers was a power machine for inserting the center strip with one man operating it. There were two burlap men who also edged the pavement, finished the transverse joints, and placed and sprinkled the burlap, and then four men covering the previous day's pour with sand and two men sprinkling.

This organization was responsible, under the able direction of the superintendent, for the pouring of an average of 900 feet of 20-foot pavement in 10½ hours daily.

#### THE WATER SUPPLY FOR THE PAVER AND FOR SPRINKLING

A Rex triplex pump and two C H & E triplex pumps of early vintage, but still performing to the complete satisfaction of the contractor, were used for the water supply of the job. As Lake Michigan was never more than one quarter of a mile away and there were a number of small streams running to it the problem of water was not a serious one. Realizing, however, that a breakdown in the supply line would prove very serious when water was the only thing that made paving possible through the wetting of the grade and for mixer operation, the contractor provided duplicate lines of 2-inch pipe throughout the work. One was used for the paver and the other for sprinkling. But in case of trouble with the paver line it could have been shifted on to the other line in a few minutes. Taps were inserted in both lines at intervals of 220 feet for the hose and the paver carried about 200 feet of Goodyear 2-inch hose.

#### RAPID WORK MADE POSSIBLE BY GOOD ORGANIZATION

Actual pouring of concrete was not started on this job until May 15, 1931, and the entire 18 miles of 20-

foot slab was completed by September. Soon after that date the shoulders, which were graded and graveled as soon as the pavement could be opened to traffic, were finished. The top soil was put on the shoulders between the gravel and the outside of the shoulders after the pavement was ready to drive on. The 28,290 feet of wire cable guard rail was installed complete. The sodding was done early in the season and some of the sod suffered from the dry spell during the latter part of June.

#### PERSONNEL

The Hersey Gravel Co., Hersey, Michigan, was the contractor for 11.33 miles of the 18-mile project, with Wilmer Pierson as Superintendent. The balance of the project was built by J. P. Scharl, Grand Rapids, Mich. The work was in charge of C. Coleman, Project Engineer, and R. A. Beers, Resident Engineer, for the State Highway Department of Michigan.

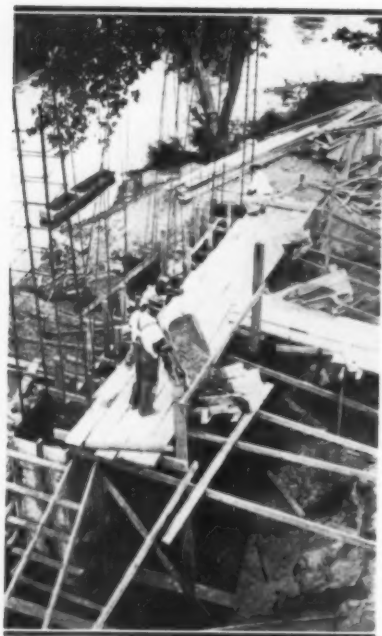
### Maintaining 24-Hour Operation of Air Compressors

WHEN the Wenzel & Henoch Construction Co., of Milwaukee, Wis., began operation on the new water tunnel they are now building to connect the Swift and Ware Rivers as a part of the Metropolitan Water Supply System for Greater Boston, Mass., they were faced with the problem of keeping the air compressors used on the project in continuous operation 24 hours daily. The tunnel, when completed, will be 54,000 feet long and 15 feet in diameter. To speed operations, four vertical shafts were sunk and operations started from these points.

An important part of the equipment of each of these shafts is a battery of three Sullivan double-acting, single-cylinder air compressors, each with a rated capacity of 800 cubic feet per minute. Because of the large amount of fine dust gravel handled at each shaft, considerable apprehension was felt as to the abrasive effect the dust and grit filling the air around the compressor intakes would have on the finely polished cylinder walls and pistons of the air compressors. Because of this, each air compressor was equipped with a Coppus-Annis dry felt filter unit of 880 cubic feet capacity which was installed in a weatherproof housing on the compressor intake pipe. The installation has been in operation for more than five months, during which time in excess of 150,000,000 cubic feet of air has been filtered without any attention having been required for the compressors or filters.



A Dry-Felt Type Filter Unit Was Installed in a Weatherproof Housing on Each Compressor Intake Pipe



# The Etowah River Bridge *at* Canton, Ga.

**T**HE new concrete bridge over the Etowah River at Canton, Ga., is one of the longer bridge structures in northwest Georgia. It is 855 feet long with pile bents for the approach structures and I-beam girders supporting the concrete deck and cantilevered curb and hand rail. The spans vary from 20 to 90 feet in length, the shorter spans being for the approach and the longest across the river. The first five spans from the south are 20 feet, then one of 22 feet followed by one of 50 feet 6 inches, one of 60 feet, the long 90-foot span over the river, another of 60 feet, one of 50 feet 6 inches, one of 22 feet and then twenty of 20-foot span on the north approach.

Work on this structure was started on January 10, 1932, with the driving of test piles to determine the length of the piles which must be ordered to carry the structure. The State Highway Department furnished a series of borings along the center line of the structure but they also permitted the contractor to make the tests on force account to be certain of the lengths for the bents. The actual work of driving the pile bents for the structure began at the north end of the bridge with the driving of 40-foot creosoted piles with a 2,400-pound drop hammer in a 45-foot lead and handled by a 2-drum hoist driven by a LeRoi engine. All of the piles for the bents from No. 12 to 33 on the north approach were driven first, four piles to a bent with the two outer piles driven on a batter of  $1\frac{1}{2}$  inches in 12 inches. Then a two-man hand saw was used to cut them to grade. The bents were capped with 12 x 12-inch x 21-foot timber cut to a 2-inch crown. Before the caps were placed, each of the piles was topped with a sheet of galvanized iron. The six pieces of sway bracing for each bent consisted of 3 x 10-inch creosoted planking

## *Details of Methods*

### *Used by*

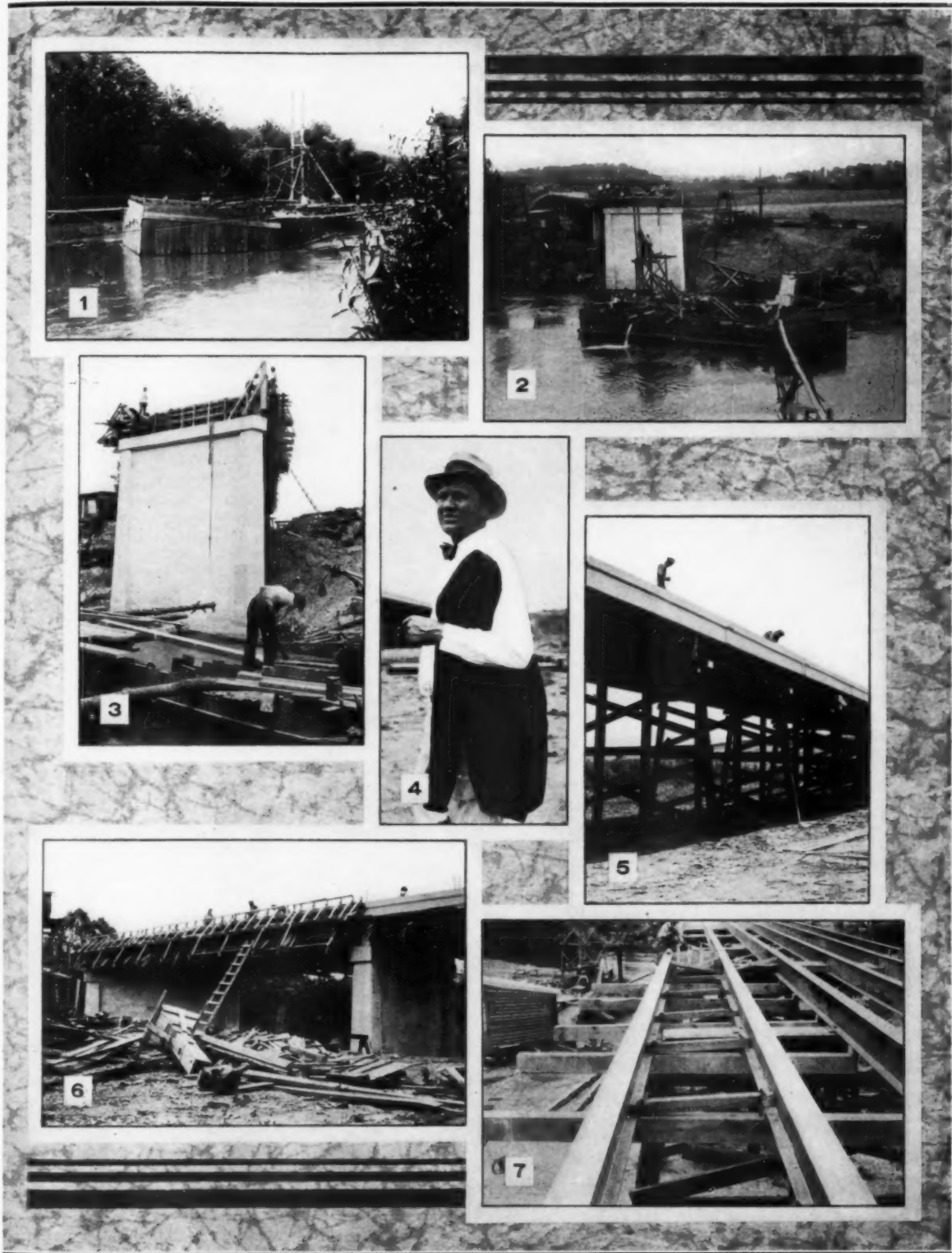
### *the Contractor,*

### *Howerton & Hageman, Inc.,*

### *of Asheville, N. C.*

from 24 to 26 feet long attached to the piles with  $\frac{5}{8}$ -inch belts and two 60d nails.

The next work was the erection of the I-beam girders which were 40 feet long for the 20-foot spans so that they extended over three bents. This permitted an expansion joint at alternate bents. The girders were not encased with concrete but had concrete spacers 8 inches thick poured between each pair of beams reinforced with  $\frac{5}{8}$ -inch deformed bars carried through holes in the girders and carried through the entire width of the bridge structure and bent up into the cantilevered bracket at the outside. These web spacers did not extend the full depth of the beams and were poured before the deck. The outer girders were 18-inch, 47-pound I-beams and the inner beams, all spaced 3 feet 10 inches, were 16-inch, 40-pound I-beams. They were set with the same hoist that was used for the pile driver, using a gin pole, and the hoist was moved along on skids as needed. A steel plate was set between each



#### DETAILS OF BRIDGE CONSTRUCTION IN NORTHWESTERN GEORGIA

1. The cofferdam for the river pier looked much like a scow headed upstream.
2. Another view of the cofferdam showing the pump discharge and the stage of work on the north bank.
3. The north bank pier as seen from the cofferdam.
4. A. M. Dietz, Superintendent of Construction for the contractor.
5. The creosoted pile bents of the north approach.
6. The end span of the north approach showing the form work.
7. The method of supporting the deck forms from the I-beam girders.



creosoted cap and the I-beam girders. A  $\frac{3}{4}$ -inch pre-moulded expansion joint was inserted between the ends of each pair of I-beam girders and web spacers.

#### THE CONCRETE PLANT AND FORMS

The concrete plant for the north approach, which was moved to the south bank of the river for the later work on that side, consisted of a 2-bag Jaeger mixer with a LeRoi engine and two Johnson Junior batch scales mounted on three legs, two of which had wheels so that they could be moved around readily at the stockpile and permit the wheelbarrows to be placed beneath to receive the weighed batch of stone or sand. Water for the concrete work was supplied from the river by a Domestic triplex road pump. The aggregate used for the concrete was marble, not for any decorative effect, but because it was the cheapest acceptable stone that could be purchased locally. Class A stone was used, varying from  $1\frac{1}{2}$ -inch down to  $\frac{1}{4}$ -inch screen size. The batches for the 2-bag mixer were made up of 666 pounds of stone and 424 pounds of sand with 2 bags of cement. The concrete crew consisted of two men shoveling stone, two men wheeling the stone, one man shoveling sand, one man wheeling sand, one mixer man, and from two to four men wheeling the concrete in buggies, depending on the length of haul. The concrete was given a full  $1\frac{1}{2}$ -minute mix.

There were four carpenters on the form work. The deck forms were made up of 1 x 6-inch shiplap. On the curbs the forms were tied with wire. For the curbs one set of forms for pouring about 60 feet of curb was made up in 20-foot panels and used repeatedly. The forms were poured one day and pulled the next morning. The outer curb forms had 1 x 4-inch horizontal wales and 2 x 4-inch vertical struts. Diagonal braces carried out to cantilevered 6 x 8-inch timbers supporting horizontal pieces were used and consisted of scrap lumber. Concrete block spacers were used measuring  $1\frac{1}{2}$  x  $1\frac{3}{4}$  inch by the width of the wall. These had a single piece of No. 8 wire centered in them and did away with removing rods or wires and wood blocks which sometimes are forgotten when the men are pouring and have to be bored out of the completed structure.

The concrete spacers and blocks for supporting the reinforcing for the deck were cast in gang molds on the floor of the bridge. The wooden molds were simply long boxes the required depth and width to give the sizes needed. When the initial set was about complete the blocks were cut to the required width with a mason's trowel in the familiar way in which candy is marked in the cooling pan. About 200 spacers and blocks were cast at one time from a single batch of concrete.

#### CANTILEVERING THE CURB FORMS

As mentioned above, the curb forms were cantilevered out from the structure. This was done in a novel manner that is worthy of mention. A cage of scrap lumber was made that fitted over two of the outer I-beams. Within this a block and tackle was rigged and one man moved it along the beams as required. Two men below attached and pulled up 12-foot lengths of 6 x 8's. These were properly blocked to fit the bottoms of the girders bearing on the caps which had a crown of 2 inches. The 6 x 8's were held in place

against the bottoms of the I-beams by two bolts run through a 4 x 4 set on the bottom flange of the two outer I-beams. In this way a cantilevered support was provided for the scaffold for the carpenters, and for the braces of the curb forms.

The reinforcing steel for the structure was received from the Kalman Steel Corp. through its Atlanta branch all bent, bundled and tagged for use. The steel men used 10d nails for tying the reinforcing steel with No. 16 wire. No special ties were used and the nails were always quickly replaceable if lost.

#### CONCRETING PROCEDURE

The contractor poured one-half of the length of a 40-foot girder at one time. At the end of each 40-foot girder, an expansion joint was left and at the mid point over the intermediate bent a dummy joint was left to localize any crack caused by deflection. The bents were poured alternately. No steel was carried over an expansion or dummy joint. At the dummy joints the concrete was edged about  $\frac{3}{4}$ -inch deep.

The concrete hand rail was poured on the deck in groups of forms when a section of the deck farther along was being poured. In this manner there was no added expense for running the mixer just for the hand rails. These rails measured 4 x 7 inches in section and about 10 feet long, depending on the slightly varying length of the spacing of the posts. Four deformed bars were left when the curb was poured so that the posts would be tied in to the curb when poured. The hand rails were removed from the molds the day after pouring and cured on the deck in the same way as the deck itself by covering with sawdust. The contractor reported this as the best method he had tried for curing concrete decks and the incidental concrete such as the hand rails. The sawdust holds the moisture for a long time and the daily wetting down of the concrete covering material is greatly lessened.

When pouring a slab or section of the deck 4 x 6-foot platforms with four legs were set in the forms without interfering with the reinforcing and made a continuation of the wood track which was laid on the deck sections already poured. This track was made of 1 x 8-inch lumber and protected the deck from any marring by the steel wheels of the concrete buggies. The specifications required that the deck be protected from any conveyances for a certain period. The contractor poured four 20-foot spans a week, and could have raised this to six but other circumstances over which he had no control made it advisable to reduce the number of laborers and hold the crew to four spans a week.

The location was ideal for a contractor's work. The country around the bridge was flat, making it possible for him to use the ground at one side of the structure as storage for reinforcing steel and lumber and the other for sheds, office and several shacks for negro labor that lived on the job.

The typical bridge builder's deck was missing from this job as the contractor used a 23-foot screed for floating the 20-foot sections of the deck and thus eliminated the rough riding features of the usual bridge on which the riding slab is not poured and finished by a road contractor. The screed was made of three pieces of 2 x 12-inch lumber bolted together and shod with a



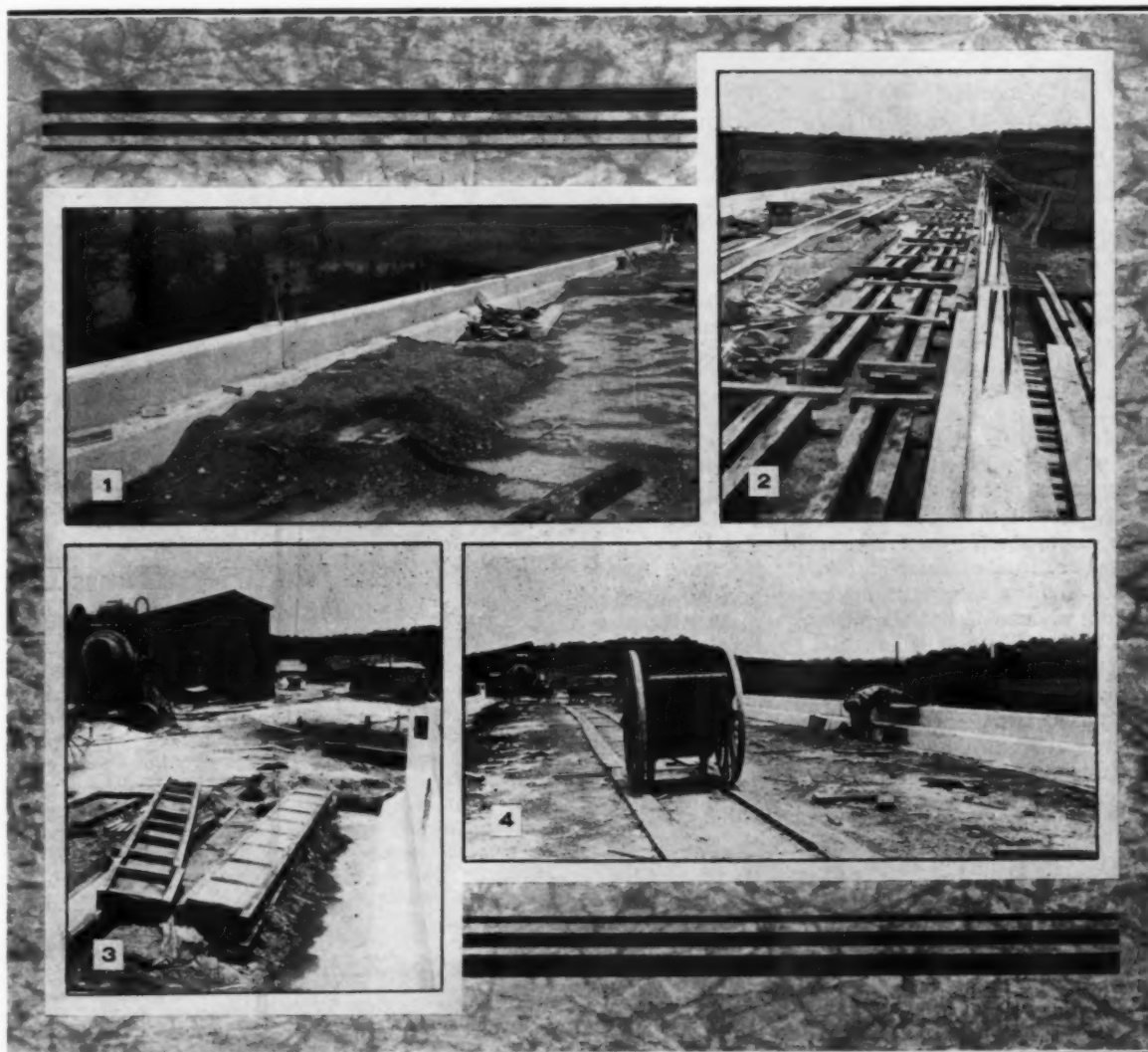
6-inch channel iron. It had heavy iron rod handles at each hand for the men operating it to use in pulling it back and forth. One man was used at each end as with the "bull-float" of the road builder. The specifications allowed 1/16-inch variation in the surface of the deck in 10 feet. If any, even as much as that, were found the contractor of his own volition used the carborundum bricks to remove them.

In finishing the curb and hand rail the carborundum bricks were used three times, first when the forms were stripped, second after they had hardened and then the final rubbing after they were completed to take off any sandy surface that might have been left from previous finishing and plastering. All of the rubbing was done by hand as the contractor's experience had been that machine rubbing requires more skilled labor to get the best results in the quickest manner without the damage that will come from careless operation, particularly in green concrete.

#### CONSTRUCTION OF THE RIVER PIERS

The excavation and construction of the river piers was awarded to W. H. Holz of Atlanta, Ga., by sub-contract. There were two river piers, each with 6 x 6-foot footings of varying depth and with two columns to the pier. The footings were carried from 1 foot below low water to rock. A 15-inch web wall was poured between the two columns which were 14 feet between footings. The columns were 2 feet 6 inches square in section at the top and battered with a 3-foot cap and riser blocks to take care of the different depth I-beams.

The first operation in the excavation for the river piers was the driving of the sheeting of the cofferdam. The inner sheeting measured about 20 x 40 feet in plan and consisted of 2 x 10-inch lumber 12 to 14 feet long. It was driven by hand and 8 x 8-inch wales were used spaced 4 feet vertically at the top and as close as 2 feet in the lower sections. About 1 1/2 feet inside the wood



#### SOME DETAILS OF CONCRETE CASTING AND FINISHING

1. Curing precast concrete hand rail in damp sawdust on the bridge deck. 2. Forms ready for pouring concrete hand rail. 3. Two gang molds for casting concrete spacers and blocks. 4. A wood track was laid to protect the bridge deck from possible damage by the metal wheels of the concrete carts. At the right, hand rubbing of the curb and hand rail base.

sheet piling the contractor placed his steel sheet piling with an 8-inch web which was driven by a steam hammer to the depth of the footing. There was a 4-foot puddle between the inner and outer wood sheet piling and only about 1½ feet between the steel sheet piling and the forms which left a scant space for the various operations. The contractor handled the work well considering this handicap and the other far greater handicap of the failure of the rock to show up at the elevation that it should on the west side of the first river pier. The forms for the footings of the river pier were 1 x 8-inch rough lumber.

The footing excavation was carried down 12 feet to rock on the east side of Pier 10. But 14 feet to the west, where the other footing was located, he went down 23 feet and struck only a sandy rock which could be readily shoveled. Test piles 11 feet long were driven without striking rock or being driven to refusal. It was decided by the state engineers to make the west footing on a pile foundation, so 40-foot piles were driven using 10 piles for the 6 x 8-foot footing which was enlarged from the 6 x 6-foot footing because of the poor foundation. Untreated pine piles with 12-inch butts and 8-inch tips were used.

For unwatering the cofferdam the subcontractor used four Pulsometers, but with an inadequate steam plant he was unable to dewater the pit faster than the water ran in, so a 4-inch self-priming Domestic centrifugal pump was installed and with this, the water was handled successfully.

The subcontractor operated a concrete plant consisting of a Ransome 2-bag mixer and Fairbanks wheelbarrow scales for weighing the aggregates for the batches.

#### PERSONNEL

Except for the delays caused by the unusual rock conditions in the river which delayed the subcontractor in the completion of the river piers, the entire structure would have been completed by the middle of June, 1932. Instead the work was held up for another month. The contractor for the bridge proper was Howerton & Hageman, Inc., of Asheville, N. C., for whom A. M. Dietz, who has a financial interest in the company, was Superintendent. The subcontractor on the river piers was W. H. Holz of Atlanta, Ga. The extensions of the west footing for the river pier was done on force account because the footing was made larger in plan and was carried deeper and required the additional construction both in the cofferdam and in the piling. For the Georgia State Highway Department, Willis Wells was Resident Engineer.

### Concrete Curing on the Tunnels at Hoover Dam

**I**N an article on the construction of the diversion tunnels at Hoover Dam which appeared in the November issue of *CONTRACTORS AND ENGINEERS MONTHLY*, it was stated that the curing process was by means of sprinkling. Although this was the method first used, a change was made later and the Hunt process of curing was substituted for sprinkling. The Hunt process, which is a bituminous compound of native asphalts together with a fixed carbon and fluxed with a volatile solvent, was applied through two air guns to the fresh concrete immediately after the lining jumbos were moved forward.

### Contracts Let for Bridge Over St. Lawrence River

**T**HE Lake St. Louis Bridge Corp. has announced the awarding of contracts for the construction of the Lachine-Cauchonawaga Bridge over the St. Lawrence River. The new span from Montreal to the south shore will be erected at a cost of \$2,559,243, with A. Janin & Co., Ltd., of Montreal undertaking the work on the piers, approaches and concrete work at a price of \$1,786,000 and the Dominion Bridge Co., Ltd., Montreal, the erection of the superstructure at \$773,243. The bridge is to be completed and open to traffic by May 1, 1935. The work of the Janin firm is to start immediately and will be carried on throughout the winter with from 150 to 300 men engaged in construction activities.

The St. Lawrence River is approximately 5½-mile wide at the point where the new highway bridge will add another traffic entrance to Greater Montreal and will also facilitate international traffic to and from the United States. The bridge is being erected from Ville La Salle, near Lachine, to the Indian Reservation at Cauchonawaga on the south shore, about 6 miles west of the center of Montreal and at the foot of Lake St. Louis.



*Floating One of the 425-Ton Bridge Trusses Into Position*

### Hoisting a 425-Ton Bridge Truss Into Position in Holland

**B**USY railroad traffic necessitated the erection of a second railroad bridge at Zalt Bommel, Holland. The new bridge was erected adjacent to the existing one and consists of three 413-foot through truss spans besides eight 171-foot approach spans of the through type. The 260-ton approach spans were floated to the bridge site, a distance of 59 miles and jacked into position. The erection of the main spans is done by raising the 425-ton trusses into position with floating derricks provided with gallow frames, as shown in the illustration. The approach spans are fabricated and erected by the firm De Schelde, Flushing, Holland. The fabrication and erection of the main spans is being carried out by Werkspoor, Amsterdam, Holland.

### Landscape Architects for Golf Course Property

**W**E are informed that the firm of Olmsted Brothers, Brookline, Mass., was retained as landscape architects at the beginning of the work on the property of the Augusta National Golf Course, Augusta, Ga., and is still so retained. We regret that this fact was not mentioned in the original article published in the October issue of *CONTRACTORS AND ENGINEERS MONTHLY*.

# How the Other Fellow Did It

## Construction Briefs

### Paint for Maintenance and for Checking

**191.** "Save the surface and you save all" is the slogan of the paint manufacturers and it is an exceedingly important slogan for contractors to remember. Well painted equipment lasts longer than that which is permitted to rust or rot without the preservative coat of paint. A Wisconsin contractor whose job we visited had an idea other than merely maintenance when he painted his equipment a distinctive blue. He had a lot of hired trucks on the job and some of the work was being done by subcontract. The blue of the contractor's own equipment showed just where it was at any time on the job. Just enough contractor-owned trucks were scattered throughout the hauling both on the grade and on the batches to set the pace for the hired trucks. With stop watch in hand, the contractor was sure that his own trucks were setting the pace properly.

Olive drab may be a good color to blend with the landscape but it is lots better to know that the flame red, bright yellow or distinctive blue spot on the landscape is your piece of equipment and that it is moving. 23.4.63

### Intermittent Instead of Continuous Feed to Asphalt Spreader Box

**192.** On most asphalt jobs where hot mix is hauled from the plant to the road and the layers spread down with spreader boxes, the truck bodies are raised and the hot-mix material permitted to slide into the box at the same time the truck pulls ahead. This is usually done continuously but on one job where the spreader boxes were perhaps a little larger than usual, the superintendent instructed the spreader men and truck men to dump approximately half the load of the trucks into the spreader box, then to pull ahead until the box was nearly empty, then dump the remainder of the material into the spreader box and pull ahead until it was nearly empty again. The superintendent explained that he secured better results and more continuous operation by this method. The one great advantage is that the box men could watch the flow of material from the box on to the road and regulate the feed door as necessary instead of having to keep one eye apiece on the tail board of the truck lest the material flow in too slowly or too rapidly. 23.2.68

### Belt Conveyors Feed Crusher

**193.** An Ontario contractor planned an interesting layout to secure maximum production in his gravel pits with a minimum of labor and equipment. The pits contained a large amount of oversize stone which necessitated crushing. The 14 x 24-inch jaw crusher was set up at a convenient point with two 100-foot 24-inch belt conveyors running to it at an angle of about 150 degrees. The belts were operated alternately and were fed by a 3/4-yard steam shovel operating against a gravel bank about 50 feet high. The shovel loaded to a steel hopper with a control gate in the bottom to spread the load evenly on the belt. The belt delivered to the top of a sloping bar grizzly over the boot of a bucket elevator which took the proper size material to the screen. Oversize went direct to the crusher which delivered the crushed material to the bucket elevator. When the shovel had worked as far as possible around one belt conveyor, it picked up the steel hopper and worked its way around to the other belt. During its operation with the second belt, the first was moved to a new location. 23.4.69

### Spotting the Trucks at the Batcher

**194.** "Hey, move back a little. No, that's too much. Hold it." That is a monologue of the weigh-man at many batching plants when the trucks back in for their loads. A contractor in western Iowa overcame this and consequently removed considerable possible friction between the weigh-man and the truck driver by merely hanging a metal ring about 3 inches in diameter at the proper distance from the front of the batcher at a point where the tail gates of the trucks should be spotted to drop the batch properly. As all the trucks were one-batch units they were about the same length and one setting of the weight was sufficient for the entire fleet of twenty-four trucks which did the batch hauling by subcontract. 23.4.44

### Cement Handlers Helped Inspector Check

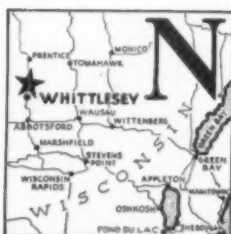
**195.** There is no contractor today with any idea of responsibility who will deliberately cheat in the number of bags of cement put into a batch of concrete. The old days when a contractor tried to get his profit out of the cement he did not use are gone. It is, however, more important today than ever that the correct amount of cement be added to each batch. In order to insure this, the contractor takes every precaution possible to see that six, seven or eight bags of cement go into each batch, and in addition the state usually places an inspector on the job as a final check on the number of bags to insure the strength of concrete. On an Illinois job, where batch boxes on industrial railway cars were used to haul the aggregates and cement to the paver, a visual check was maintained on the number of bags of cement dumped into each batch box. Four men under contract handled the cement at the dock from the railway cars. They used hand trucks to bring out six bags of cement per load and then spotted the piles along the dock edge ready for the industrial railway train. Each man as he emptied the bags into the boxes tossed the empty bag over the edge of the box so that at any time the actual number of bags that had been emptied could be checked. As soon as the six bags had been emptied into any one batch box, the bags were tossed off to the far side together and then picked up by another man and baled. 23.4.52

### Rivets, Fence Posts and Stumps

**196.** One might ask what have rivets, fence posts and stumps to do with novel ideas and aids to construction. It happened that a contractor in Illinois was running a 12-car industrial railway train with two batch boxes to the car and the problem of speeding up the loading of the batches was a serious one. First, to save time, the contractor built an aggregate bin capable of holding three cars of aggregate and equipped the bin with eight batchers, four for gravel and four for sand. The 12-car trains with two boxes to a car pulled into a switch on the road near the plant and exchanged for a full train. The yard locomotive then picked up the empty train and pulled by the cement platform to the batching plant. Here is where the rivets, fence posts and stumps acted as an aid to quick loading. The locomotive engineer was remarkably accurate in spotting the cars under the batchers without the aid of a brakeman. He had lines of rivets on some nearby gas tanks, some fence posts and two tree stumps spotted along the tracks which gave him the correct place to hold the locomotive for each pair of cars to be loaded. This greatly speeded the loading. 23.4.52



# A Different Organization around the Paver



OT completely satisfied with the initial method of handling the bulk cement from cars to the batch trucks, the McKenzie & Kileen organization changed the manner greatly in the second set-up for its 13-mile road job between Whittlesey and the Taylor County line on Wisconsin Route 13. The line-

up around the paver was rather different from that usually used in handling 20-foot paving and presents an interesting study.

## HANDLING THE AGGREGATES AND BULK CEMENT AT THE FIRST SET-UP

A siding of the Soo Line near the southern end of the job offered the first opportunity for the handling of the sand and gravel for the road. Both sand and gravel were shipped in by the Eau Claire Sand & Gravel Co. from its pits at Chippewa Falls, Wis., in gondola cars and were unloaded to stockpiles or to the bins direct by a P & H crane with a 45-foot boom and an Owen 1-yard clamshell bucket. Using only three sizes of aggregate it was possible to handle them with one crane very easily. The crane ran along a path between the siding and the two Johnson batching plants. Both were two-compartment bins, but one was used for the two sizes of stone and the other solely for sand.

Twelve cars of aggregate and cement could be accommodated on the siding at one time. The cars were spotted twice daily by the local freight and then moved by an American Hoist & Derrick hoist rigged with a bar and horse similar to the old method of moving houses through the city streets. A cable long enough to reach the entire length of the siding was used so that

## *McKenzie & Kileen of Minneapolis Changed Bulk Cement Methods and Had Unusual Grouping in Concrete Crew*

any car or group of cars could be moved at any time. The method was slow but effective. Usually two or three cement cars were spotted at the dead end of the siding. A total of eighteen cars of material were regularly unloaded each full working day. Two men cleaned up in the aggregate cars, and the only other men around the plant were the crane operator, the two batcher men and one man checking the hired trucks which were paid per batch hauled.

The cement dock, about 300 feet from the nearer batcher, was built to accommodate two cement cars at one time so that there would be no delay when one car was emptied. The original method of handling the cement was not entirely satisfactory to the superintendent but was continued during the use of the first location because of the difficulty in making the change during the progress of the work. The first dock was about 40 feet long, running from one freight car door to the next, and was 10 feet wide. Steel plates measuring 3 x 4 feet were used as gang planks between the cars and the dock. The beam scales for weighing the loaded buggies were located close to one freight car door, but at the outer edge of the dock.

There were four men shoveling into the cement buggies, one man wheeling, weighing and dumping and another man on the trucks covering the cement with sand.



This was later changed to two men shoveling and two wheeling with the extra man dumping. There were two separate drop platforms or traps which were let down onto the sides of the trucks, with blocks on them so that when the buggies were wheeled out the blocks stopped the forward progress and helped dump the batch. The traps were counter-balanced with scrap iron and the man who covered had to raise and lower them for each truck.

All hauling of batches was done by subcontract by Volck Bros., of Bruce, Wis., using one and two-batch International trucks. In order to use the traps at the first bulk cement dock it was necessary to build up the right side of the body to meet the elevation of the trap when dropped as the truck body was relied upon to furnish the support at the end away from the dock.

The average batch hauled by the trucks was 1,554 pounds of coarse gravel, 1,038 pounds of pea gravel and 1,543 pounds of sand for the 630 pounds of cement to produce a 33-cubic foot batch of mixed concrete.

#### PREPARING THE GRADE

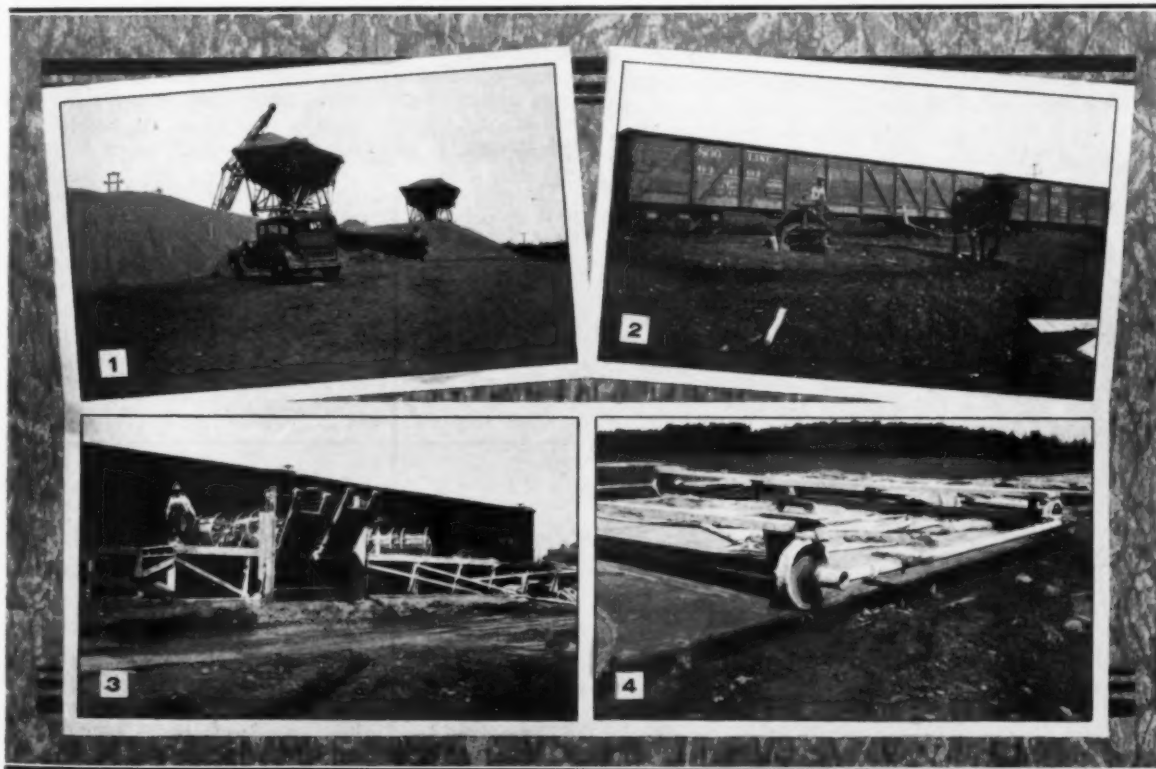
The fine grade was prepared well ahead of the paver, and the forms usually between 500 and 1,000 feet ahead of the concrete at all times. There were three men setting the 9-inch Blaw-Knox steel forms after the trench had been cut with a Carr Formgrader. A Caterpillar Thirty pulled a Carr scarifier and a Euclid rotary scraper, and a second Thirty handled the Carr subgrader

and scarifier. A Wehr one man grader and a Wehr roller were used effectively in the final preparation of the fine grade. Four men with shovels followed up the subgrader and trimmed the grade. One man tamped the forms to insure a firm foundation for the finishing machine. Another handled the oiling of the forms and assisted with the setting of the bulkheads for the 1-inch expansion joints which were poured, and helped with the steel when fabric mesh was being used over soft spots in the grade and at the approaches to bridges and over all culverts. One man handled the Freeman turntable and another man took care of the dumping of the batches as the trucks arrived at the skip of the Rex 27-E paver.

#### THE CREW BACK OF THE PAVER

The paver pulled a Carr subgrade planer and two tail graders shoveled the excess dirt out to the shoulder. Two men placed the steel dowels,  $\frac{1}{2}$ -inch by 4 feet, spaced 2 feet apart, across the continuous longitudinal center slot, and ten dowels across every plane of weakness at 30-foot intervals with metal sleeves on one end of each dowel to permit freedom of movement. These two men also placed the joint boards for the poured joints. There were three puddlers and one spader who handled the spading against the forms on both sides of the slab.

The Ord finisher operator and a helper placed the transverse slots from the finisher, using a hand cutter



SCENES ON A 12-MILE PAVING PROJECT BETWEEN WHITTLESEY AND THE TAYLOR COUNTY LINE, WIS.

1. One crane served the two batching plants running along a path between the siding and the bins. 2. "Old Dobbin" and the capstan moved one or all the aggregate cars on the siding. 3. The cement dock showing the dual traps. 4. One end of the "bull-float" bridge showing its pipe construction and its rests for the float.

to make the slot for the oiled metal wedges. The two men on the 10-foot longitudinal float, which was worked from a twin rolling bridge made with a pipe frame and a wood top and racks to hold the float while not in use, placed the continuous center strip. A four-wheel bridge with all the necessary equipment for installing the transverse joints was attached to the finishing machine by a metal frame about 4 feet long. The "bull-float" men also used the two canvas belts and straight-edged the pavement and edged the slab. Behind them came two more men with another rolling bridge who pulled and edged the center and transverse joints and pulled the expansion joint bulkheads.

The burlap was carried neatly spread on a rolling bridge and was placed by two men who also sprinkled it. The longitudinal slot, transverse slots and expansion joints, were poured with tar by ten men using a Littleford tar kettle and hand pouring pots. The covering of the slab the morning following pouring was done by subcontract by six or seven men and from three to nine of the contractor's men sprinkled the cover for seven days. Two teams and drivers on one side handled the pulling and hauling forward of the forms which were unloaded by the form setters. The contractor preferred to use the two teams on one side so as to leave the other clear for the water line, hose and the storage of the fabric mesh reinforcing.

#### WATER SUPPLY FURNISHED BY TWO PUMPS

The water supply for the paver and for sprinkling was furnished by two Rex triplex pumps set up at the same stream but pumping in opposite directions. A 2½-inch pipe was run along the shoulder with taps for the paver hose every 250 feet. The paver carried 150 feet of 6-ply Parkway hose furnished by the New York Belting & Packing Co. A 3-foot piece of hose with the usual coupling and a Mulconroy tightening device was used on the taps and one was always set on the tap ahead of the paver. The outer end of the short length of hose and the end of the paver hose away from the paver were equipped with Quick-as-Wink fasteners which only require pushing together to give a tight connection under pressure. The two burlap men and the tail graders with whoever was free at the minute moved the hose ahead.

#### PRECAUTIONS WHEN SOFT GRADE WAS ENCOUNTERED

The contractor always carried a stock of ¾ x 24-inch steel plates in 10-foot lengths for use ahead of the paver to prevent the trucks cutting the grade when it was soft. At one time on this job where the grade was adjacent to a swamp the plates were pushed down so that a ridge which came as high as the transmission showed all along the grade. The use of the plates hastened the time when the trucks could be put to work after a rain and saved many valuable working hours.

#### PERSONNEL

This contract which called for the completion of 13 miles of 20-foot pavement in 120 working days with 10 working hours per day and a 50-second mix was completed on time by McKenzie & Kileen of Minneapolis, Minn., and Superior, Wis., with G. H. Rouse as Superin-

tendent. C. E. Torgerson was Resident Engineer for the Wisconsin Highway Commission on this project.

#### Work on New Road Jobs in Minnesota

**F**OLLOWING the opening of bids on September 20, 1932, at the Minnesota State Highway Department office, contracts were awarded on twenty-nine improvement projects which will furnish employment for workers as long as weather conditions permit and which, when completed, will make material improvements to several trunk highway routes. Fourteen of the projects are in the emergency relief classification and employment on them will be subject to the regulations imposed in connection with the granting of the emergency Federal Aid. Other projects include grading, graveling, shouldering, paving and bridge work.

#### Excavating for a California Highway

**H**IGH speed in excavation is a feature of the Basich Bros. contract for relocation of the highway between Carquinez Bridge and San Pablo Creek, in Contra Costa County, Calif. This contract represents 10.75 miles of new road, with 291,000 yards of excavation and 2,141,000 yards of overhaul. Work was started July 7 and is to be completed in 300 working days, by June 22, 1933. On September 7 the grading work was approximately four-fifths completed.

The construction involves two methods—the use of a rooter and scrapers for about 80 per cent of the total excavation and fill and the use of the power shovel and truck method for the remaining 20 per cent. The rooter and scraper work was done first and is now practically completed. The shovel and truck work still to be done includes the widening of cuts already in existence where sections of the old location are being used for the new road, the filling in of shoulders along the existing highway and some excavation. The soil encountered includes considerable sandstone on the eastern end of the work and a mixture of sandstone and clay on the western end. Except in one cut, no explosives have been used, the rooter being sent through the sandstone without any preliminary breaking up.

The equipment used in grading includes two LeTourneau 7-yard scrapers, two 9-yard Carry-all scrapers, one rooter, one three-section sheepsfoot roller, five Caterpillar Sixties, one Thirty, two LeTourneau bulldozers, a power shovel, trucks and a grader for working along the shoulders.

The new road will be of three-car width and is, except for 1,100 feet, an entirely new highway. It will be paved with asphaltic concrete except on the steeper grades, where portland cement concrete will be laid. Basich Bros. is the contractor for both grading and paving.



WORK ON THE SAN PABLO CREEK CONTRACT OF BASICH BROS.

The spreading of earth fill is shown in the left background and a scraper returning empty is seen at the right

# Drilling and Blasting

## in Highway Grading

### Part IV

Reported by

Andrew P. Anderson

Highway Engineer  
Division of Management  
U. S. Bureau of Public Roads

**T**HERE are apparently several other conditions which influence the rate of drilling but upon which definite data are difficult to obtain. Thus, the rate at which the drill will cut in a given rock depends on the air pressure at the drill, the type and condition of the drill bit, and the hardness of the cutting edge or the length of time that the cutting edge remains fit for rapid cutting.

High air pressure is not of itself a guarantee of a high drilling rate for the average job. In hard rock a working pressure of over 100 pounds per square inch at the drill is very likely to cause excessive drill breakage. In a soft, seamy, or highly stratified rock with a large angle of dip, working on full open throttle at this pressure is likely to cause excessive sticking. In rock of this kind a working pressure above 100 pounds per square inch at the drill is not necessary.

This table shows the effect of air pressure at the drill on the rate of cutting hard granite, and hard stratified limestone. The stratifications, however, were all practically horizontal and therefore did not add to the difficulty of drilling.

EFFECT OF AIR PRESSURE AT DRILL ON RATE OF DRILLING WITH 7-POUND JACK HAMMER IN GOOD CONDITION. HOLES 8 to 15 FEET IN BOTH STUDIES

Hard Limestone with Horizontal Strata		
Working Pressure at Drill Pounds per square inch	Rate of Drilling While Drill was in Actual Operation Feet per hour	Number of 1-hour Studies
56.....	11.0	1
60 to 70.....	23.8	22
70 to 80.....	22.8	44
Above 80.....	28.9	2
Hard Granite		
45.....	1.5	1
50.....	8.7	3
60 to 70.....	13.9	6
75 to 87.....	21.8	5

On a great majority of the jobs studied the working air pressure at the compressor ranged from 80 to 100 pounds per square inch. Thus, only one job was found which used a regular working pressure of 125 pounds and only one job using a regular working pressure below 70 pounds per square inch. But the pressure at the compressor may be quite different from that at the drills. In general, too little attention is given to the size or condition of the pipe and hose lines. Air leaks were numerous in most lines. Gage readings on one job showed an average loss of 1 pound of pressure for each 16 feet of  $\frac{3}{4}$ -inch hose or  $\frac{3}{4}$ -inch ordinary pipe line when supplying one drill at about 75 pounds pressure. Few jobs were found, however, with a pipe line as small as this. The more common size was 1-inch for the pipe al-

though the use of  $\frac{3}{4}$ -inch hose was fairly common. A few jobs on which four to six drills were in regular use from a common pipe line used 2-inch pipe, while one job had a  $2\frac{1}{2}$ -inch line. Pipe lines as long as 1,200 feet were found in use. Needless to say pipes of this length must have very tight unions and be of sufficient size for the number of drills to be supplied, or the working pressure will be very low.

#### TIME LOSS IN UNPRODUCTIVE OPERATIONS

On present jobs from 7 to 12 per cent of the working time is lost in changing drills, although it is known that the practice of using each steel until its full depth has been reached is far more common than that of changing the steel when it has become dulled to such extent that the rate of penetration is materially reduced. Thus, the common practice is to cut the steel into lengths which are multiples of  $1\frac{1}{2}$  or 2 feet, the latter being the most common. But hard and difficult rock will often dull the steel so much in drilling one foot that the time required for the following 6 inches is equal to that required for drilling the first foot. About the only times regular changes are made before the drill length has been attained is when the drills regularly lose so much gage that the following drill will not work readily. And even these conditions are usually blamed on the blacksmith, who is importuned to increase the die.

Under normal field conditions the drill is cutting rock only from 35 to 60 per cent of the total time the operator is on the job. The rest of the time is largely consumed in performing a number of necessary but unproductive operations, such as changing steel, blowing the hole, moving to the next hole, oiling the drill, etc. Frequently additional operations become necessary or are added to the duties of the drill operator, such as removing a stuck steel, clearing overburden, bringing up steel, or springing the drilled holes. The amount of time consumed in performing each of these operations varies with a number of factors, among which the skill and experience of the operator and the kind, character, and nature of the rock play a very im-





*In some rock an inexperienced or careless operator will spend much of his time removing stuck steel. Poor sharpening equipment or a careless blacksmith will intensify this trouble.*

portant part. The time studies show that some operators regularly consume at least twice as much time in changing steel as do some others, while in certain kinds of rock the unskilled or inexperienced operator frequently loses much more time in extricating stuck steel than his more skilled and experienced co-worker. The amount of time lost in performing the various necessary unproductive operations is also dependent on the character of the rock. In rock in which the drill will cut at the rate of a foot in two minutes the number of steel changes per hour will ordinarily be about twice as many as in a rock in which the drill will only cut at the rate of a foot in four minutes. On the other hand, in soft rock more time is usually required for such operations as blowing or cleaning the hole and from steel getting stuck, while in very hard rock much time is frequently lost from broken steel, especially if the air pressure at the drills is too high.

The actual time in which each individual operation can be performed also varies with several factors. For example, aside from the skill of the operator, the time required to exchange steel varies with the depth of the hole. The following is a typical set of stop-watch readings of the exchange time for an excellent operator while drilling a hole 15 feet deep in fairly hard but uniform granite: 20, 22, 25, 32, 40, 40, 47, giving an average exchange time of 32 seconds for the hole. The first and second exchanges of steel are frequently made in 15 to 20 seconds and single individual readings as low as 12 seconds are on the record. The increase with depth is rapid, and a 20 to 25-foot steel is seldom exchanged in less than a minute with the average time nearer 2 minutes. If the steel happens to stick or bind in the chuck, as is frequently the case, the exchange time for that particular change may readily be doubled or even trebled. This is the reason why the records of many thousand stop-watch studies show an average exchange time of about 45 seconds for holes from 12 to 15 feet in depth, while the individual readings range from 12 seconds to somewhat over 6 minutes, and the percentage of the operator's time consumed in exchanging steel varies from less than 3 per cent to over 25 per cent with an average of 8.9 per cent for 20 fairly large jobs.

The contractor who has much rock work should therefore find it profitable to give considerable attention to the training of the drill operators to perform all

necessary operations in the shortest possible time. The drilling crew is really only productive when the drill is actually cutting rock. The various operations which interfere with actual production should therefore be reduced to the lowest limit. The contractor's interest must not end with simply insuring a high utilization of the available time. He must also see that the utilized time is converted into the greatest possible number of linear feet of properly placed and spaced holes. This requires the constant maintenance of adequate air pressure at the drills, together with an abundant supply of properly sharpened and correctly tempered steel of the right length within easy reach of the operator. One of the surest ways to make certain of low production from the drilling crew is to permit any one of the following to occur: low air pressure at drills, too soft or too hard steel, poorly sharpened or poorly gaged steel, or requiring the drill operator to bring up his own steel or to move a heavy overburden in order to locate the holes. Under many conditions any one of these can readily reduce production more than 25 per cent, and if two or more are allowed to occur simultaneously production may readily drop to one-half of what would otherwise be possible.

*(Continued in the January issue)*

## An Elevated Super-Highway Rushed to Completion

ONE of the world's most amazing, yet practical, highway structures was recently completed between Jersey City and Newark, N. J. This is the elevated super-highway leading to the entrance of the Holland Tunnel which connects New Jersey with New York City. The long steel structure crosses 3 miles of Jersey meadows at a sufficient height so that highway traffic will not be held up by the raising of draw spans, two of which must be crossed on the older roadway. With this new structure it is possible to cover a distance in 5 minutes which formerly required anywhere from 20 to 40 minutes, depending on traffic density and the number of ships demanding passage through the bridges. Gen. Hugh Scott, Chairman of the New Jersey Highway Commission, stated that the distance eliminated by this new highway and the reduction in driving time would result in an estimated direct saving of \$17,000,000 a year.

The elevated super-highway is paved with concrete and rises from 100 to 150 feet in the air crossing both the Passaic and Hackensack Rivers, railroad tracks and yards and highways. It is estimated that 18,000,000 cars a year will use this specially designed steel and concrete viaduct.



*Trackson Crawler Wagons Working With Allis-Chalmers Tractors on Levee Construction Near Vidalia, La. This Equipment Is Owned by Carl Erickson, Subcontractor on the Valley Construction Co. Job Near Vidalia, La.*





## The Editor Comments —

### The Relation of Construction to Business Stability

The National Conference on Construction, held at Washington, D. C., in October, drew up a series of resolutions which contained a great many worthwhile suggestions. Among these resolutions is one on the relation of construction to business stability which should receive widespread publicity. It reads:

"Construction can be made a great stabilizer of business activity. While over-expansion in any industry produces difficulties, over-expansion in construction introduces elements of dangers for all business endeavor. Similarly, violent contraction in construction tends to produce more widespread effects than contraction in any other line, stagnating endeavors in multiple directions. Orderly and healthy development of construction, freed from wide fluctuations, is essential to economic stability.

"The possibility of securing such development requires reexamination in the light of our present situation. The immediate pressing problem is to hasten in all practical directions the restoration of confidence which will release private capital and credit into construction and other trade invigorating channels. But scarcely less urgent is the related problem of discovering practical ways and means for obtaining an orderly and balanced volume of construction, efficiently produced and reasonably adjusted to the country's needs for private building, for utilities, and for public works."

Stimulation caused by the World War brought about tremendous over-production of industrial plants, many of which were never used after the war even during the boom years of 1928 and 1929. In fields not connected with munition production, the boom years caused tremendous strides in construction for industry resulting in vast over-production of business structures for housing factories and offices. The only form of construction which really lagged was the building of low-rent housing projects to replace the slums of American cities. All other forms of construction progressed at a terrific pace.

Since 1929, construction has been suffering from this over-production which if it could have been spread over five years instead of two, or ten years instead of five, it would have provided more uniform employment for the various trades engaged in construction and would have smoothed out the peak production of construction equipment. Long term planning of construction projects is necessary. This is not as easily possible in construction for individuals, but large corporations can plan industrial and housing developments to continue over long periods. Public utilities in the past have been probably the most uniform planners of construction and spenders of money in that field. The greatest improvement in construction conditions can be fostered by our

municipalities, states and Federal government, through careful planning of progressive construction in all fields of governmental endeavor and the award of contracts for this type of work to responsible contractors.

### A Word from One Who Appreciates Contractors

Robert Ridgway, Chief Engineer of the Board of Transportation, New York City, retired from that post on October 31, 1932, after having worked for New York City in its water department or in connection with its transportation facilities for 48 years. During this period Mr. Ridgway was intimately connected with the construction of the new Croton Aqueduct and the various subways, having close contact with the contractors engaged in those vast projects.

At a dinner given to Mr. Ridgway upon his retirement, he spoke of the contractors he had known during the past half century and commended the quality of the work done by these men. He said, "No sympathy is wasted by the public on contractors who have to take a loss for construction of public works, and there have been many such. Note how many of the oldtimers have been driven to the wall after contributing in the way of losses to the work that the public uses. . . ."

### Normal Times

In a notice received from Fred G. Wieland, an active organizer and promoter of exhibits and expositions in the Southwest, we have found the following sentence which is worth pondering upon, "These times are normal for the man who waits for something to turn up, and the organization which waits for its ship to come in may find it to be a receivership." Jobs are not plentiful, contract lettings are not plentiful, machinery sales are not plentiful, even advertising is not plentiful. We must all get out and sell, not by the old high-pressure quota method, but sell our services, our equipment and our advertising pages by showing the customer the value of each specific product to him.

### Remember the Highway and Building Congress

On January 16-23, 1933, a Highway and Building Congress, sponsored by over thirty national organizations connected with the construction industry, will meet in Detroit to discuss mutual problems in an endeavor to stabilize the construction industry. In connection with this, a Road Show will be held at the Detroit Municipal Airport under the auspices of the American Road Builders Association, and I urge the readers of CONTRACTORS AND ENGINEERS MONTHLY to attend and participate in the discussions.

*Theodore Reed Kendall*

## A Balanced Program of Production and Sales

By  
**William H. Ziegler**  
*President*  
*William H. Ziegler Co.*  
*Minneapolis, Minn.*

**"P**ROFITLESS PROSPERITY" ended in 1929. The program of over-production was brought about and carried along by super-sales plans of one kind or another, all of which required an increasing volume each succeeding year. The net result of this program was a gradual increase in the cost of goods, and required increased expenditures which were not justified. Scores of high-priced salesmen were located in various cities and states, all of which added to the expense of the program. These sales organizations were spurred on by the sales manager who insisted on a big increase in everybody's quota each year. Sales were made that should not have been made. Business was secured in 1929 that should not have been placed for several years. The market was forced years ahead of normal requirements. Now these expensive sales organizations of the "prosperity" era have quite generally disappeared.

The productive capacity of the United States is such that almost over night more goods can be produced than can possibly be consumed. If the producing forces permit themselves to engage again in unlimited competitive policies, we shall soon be back where we were in 1929. It would, therefore, seem reasonable to assume that a sane, balanced program of production and sales is vital. To secure this, it may be necessary to adopt a plan of shorter hours, staggered employment, one shift operation with no extra days or overtime, to maintain a steady production, perhaps even slightly behind consumption, which in the long run will mean more years of good business and less years of profitless prosperity and fewer depressions.

The construction equipment distributor can be a vital asset to such a conservative program of sales distribution. If he has been able to survive financially, he is now in a stronger position as a distributing force than ever before. His set-up is logical and natural. He is a local institution, pays taxes, belongs to local organizations, takes part in community fund drives, and is regarded as a thoroughly local concern by business men in the community. Being a local institution, and not simply a salesman or district office which is changed from time to time, the distributor devotes his entire thought and planning to develop his business over a period of years which in the end will mean a sufficient competence to maintain himself, his family and those associated with him. He understands the needs of the territory, the things that will work satisfactorily and avoids those that will not. His sales are based on a sound program of public and private requirements. He can be trusted not to oversell his market because he must live with these people after the sale. He presents to the manufacturer a means of distributing his product at a minimum cost and places the manufacturer in the position of having intimate local relationships and representation. He offers the lowest cost sales distribution by reason of his set-up, spreading the costs over many lines. This is important, for not all commodities command large sales every year and many are seasonal. In such cases the manufacturer has no selling expense except when his distributor sends his orders. With the other system of district offices, salesmen and direct selling,

the expense goes on, day and night, in season and out, with or without business.

We hear much of the excess costs of middle men, distribution and so on. Some selling organization must be provided for every commodity. There is nothing that will command sales without selling effort. What can be simpler, cheaper or more logical than a distributor organization taking the manufacturer's product direct to the consumer?

While the years 1930, 1931 and 1932 have been hard on distributor organizations, as on manufacturers and others, the period ahead looks very bright. The most encouraging feature of all is that the distributor has stood the test, his position is conceded more logical than ever, he is accepted as the medium for the lowest cost of distribution and his contribution to the industry is one that commands greater respect and attention.

## New Distributor Appointments

**Gardner-Denver Co.**, Quincy, Ill., has announced the appointment of the Southern Machinery & Supply Co., Roanoke, Va., as distributor for its complete line of rock drills and accessories, portable and stationary air compressors, steam and power pumps.

**O. K. Clutch & Machinery Co.**, Columbia, Pa., has appointed the Engels Tractor Co., Inc., 334 N. Genesee St., Utica, N. Y., as its exclusive representative in that territory. The distributor will carry the complete line of O. K. gasoline and electric hoists and air compressors.

**Rex-Watson Corp.**, Canastota, N. Y., has announced the appointment of Frank B. Harris, Yacht Sales & Service, Inc., 401 No. Broad St., Philadelphia, Penna., as its representative for the sale of the new patented Watson tractor-hitch trailers. Mr. Harris has had a broad experience in both automotive and boat merchandising lines. His territory includes eastern Pennsylvania, southern New Jersey, Delaware, Maryland and the District of Columbia.

**Marmon-Herrington Co., Inc.**, Indianapolis, Ind., manufacturer of all-steel drive trucks, has appointed the Associated Equipment Co., Ltd., 355 Fremont St., San Francisco, Calif., as its distributor in northern California and Nevada. J. H. Heil is President, William C. Gunther, Secretary, and W. H. Worden, Director of Sales. The R. L. Harrison Co., Inc., R. L. Harrison, President, of Albuquerque, New Mexico, has been appointed distributor for the state of New Mexico.

## Federal Relief Act Speeded Concrete Road Awards

**G**OOD weather and the need for employment caused many states and counties to hurry concrete road plans to early completion so that they could be let before the close of 1932. Illinois leads with 10,000,000 square yards, equivalent to 850 miles of 20-foot highway, already under contract in 1932 and much of it completed. Texas and Wisconsin follow closely with only slightly smaller mileages under contract. Minnesota, with over 5,000,000 square yards now under way, is engaged in the largest construction program in its history.

Authorities are taking advantage of low prices and the fact that over 90 per cent of each dollar spent for concrete pavement goes to labor, directly or indirectly. Maine began an unusually large season's program with upwards of 400,000 square yards; Georgia took bids on 48 miles at one letting and Missouri's record letting included 107 miles.

More lettings have been scheduled as fast as plans can be completed. New impetus has been added by the emergency loan of \$120,000,000 Federal Aid from the Relief Act to be spent before July 1, 1933.

## Construction Industry News

**Blaw-Knox Co.**, Pittsburgh, Pa., has announced an arrangement with the Madsen Iron Works, Los Angeles, Calif., whereby Blaw-Knox will manufacture and sell complete plants of Madsen design and patent for pre-mixing asphaltic pavement material in territories in the United States east of the Rocky Mountains and in countries outside of the United States of America.

**Good Roads Machinery Corp.**, Kennett Square, Penna., entertained its dealers and representatives at the main office and factory on November 18 and 19. The purpose of this meeting was to acquaint the field men with various developments under way and to discuss future plans.

**Link-Belt Co.**, 910 So. Michigan Ave., Chicago, Ill., has appointed George M. Sharer as Sales Manager of its eastern division with headquarters in Philadelphia, with direct supervision of sales of all of the company's offices in the Atlantic Coast states. He is a Mechanical Engineer and has been connected with Link-Belt in Philadelphia for the past 32 years. This company has also announced the appointment of Moore-Handley Hardware Co., Birmingham, Ala., as distributor in the Birmingham territory for the entire Link-Belt line of elevating, conveying and power transmitting machinery. Moore-Handley Co., which has just celebrated its fiftieth anniversary, will also carry a suitable stock of Link-Belt chains, gears, sprockets, transmission machinery, screw conveyors, and chain drives.

**Worthington Pump & Machinery Corp.**, Harrison, N. J., has announced the appointment of Hugh Benet as manager of its Harrison, N. J., works. Since 1927, when Mr. Benet became associated with Worthington, he has served as manager of the Holyoke, Mass., works.

**Caterpillar Tractor Co.**, Peoria, Ill., has announced that George L. Wennerlyn, who has served that company and the Russell Grader Mfg. Co., for 20 years, has moved from Minneapolis to become Assistant Advertising Manager at Peoria. Mr. Wennerlyn's chief responsibilities will be in the utilization of advertising material, including dealer and district representative contacts, and the supervision of dealers' local display advertising and direct mail programs. Mr. Wennerlyn is one of the pioneers in the good roads advertising field. His record includes 8 years with Dallenmayer Advertising Agency at Minneapolis, 16 years with Russell Grader Mfg. Co., Minneapolis, in sales and advertising and 4 years with the Caterpillar Tractor Co. as Assistant Manager of the Minneapolis Plant.

**Union Steel Casting Co.**, Pittsburgh, Pa., has announced the election of Merrill G. Baker, prominent engineer and recently assistant to the vice president of Ford, Bacon & Davis, Inc., to the position of President. Jan R. Dunsford has been elected Chairman of the Board.

**Sprout, Waldron & Co., Inc.**, Muncy, Pa., has announced the removal of its New York office from 75 West St., New York City, to 223 Cowperthwaite Place, Westfield, N. J. David E. Smyth is District Manager.

## Better Control of Air for Pneumatic Tools

**A**N automatic air-control valve, which permits definitely limited quantities of air to pass at various pressures, the quantity varying directly as the pressure, has been developed by the research department of the Jeddo-Highland Coal Co., which has sold the manufacturing rights to the Yarnell-Waring Co., Philadelphia, Pa. The valve is designed to prevent waste of air in the operation of pneumatic jack hammers and is equally effective for paving breakers working in congested sections where the whipping of a broken or disconnected hose is a serious hazard for pneumatic riveters and for other work involving air pressure. With modifications it can also be used in sectionalizing water lines.

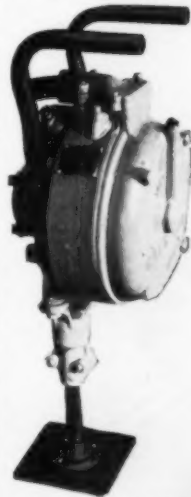
The valve, placed near the end of the air line, consists of a globe valve body and a separate operating mechanism, fastened together and sealed to prevent tampering. In the simplest form, it consists of a piston in the operating housing, connected by means of a hollow valve rod to the valve disc. This disc is pierced by a 1/16-inch hole. The piston is held in its lower position by a spring and the line pressure, which is above the disc.

The openings of the hollow valve stem are beyond the valve disc and into the cylinder below the piston. When the line below the valve is tight, pressure is established because of the leak through the disc. When this pressure beyond the disc approximates that of the main line, the valve opens against the spring. An orifice in the valve body on the incoming side causes a pressure drop through the valve, varying with volume. By spring adjustment, the valve will close at any pre-determined line pressure drop, corresponding to the volume flow. To compensate for variable line pressures, a second piston is employed to compress the spring in direct relationship to the line pressure. This spring receives its pressure from in front of the orifice and is not affected by the pressure drop through the valve. In operation the orifice is set for a given size tool and the springs adjusted to the flow for that tool. The valve is then sealed.

## An Electric Backfill Tamper

**A**N electric backfill tamper which delivers 1,800 heavy blows a minute for field use and which is operated by a compact, light weight gas electric power unit, has been announced by the Electric Tamper & Equipment Co., Lundington, Mich. This tamper is used for tamping and compacting earth backfill, for excavating clay or shale and may be used to advantage in demolishing brick pavement and for vibrating concrete on bridge decks.

The Jackson electric backfill tamper is not a new machine but is an adaptation of the Jackson electric tie tamper which has been used extensively by the principal railways in the United States for track maintenance. The tamper motor is wound for 110-volt, 3-phase, 60-cycle alternately current. The power plant is light, but is built to withstand weather conditions and severe service and may be used for operating any type of portable electric tools or lights for night work.



*The Jackson Backfill Tamper*





*The New Hug Model 87Q Truck*

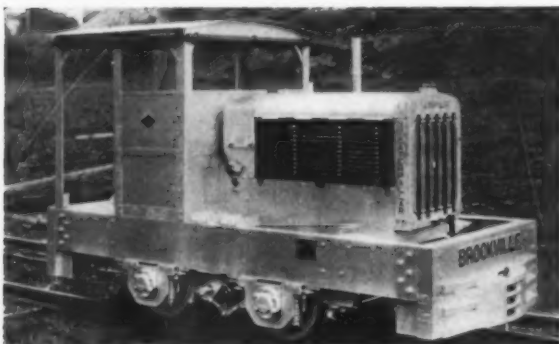
## A 6-Yard Power-Hoist Dump Truck

**A** TRUCK especially designed for road builders and contractors to operate under shovels in gravel or sand pits or on multiple batch hauling jobs is being built by The Hug Co., Highland, Ill. This Model 87Q Roadbuilder has a  $5\frac{1}{2}$  to 6-yard power hoist body with a maximum load capacity of 16,000 pounds. The power of the 4-cycle, 6-cylinder Buda heavy-duty truck engine is transmitted through seven speeds forward and two speeds reverse, carrying the truck with its maximum load over rough roads. This truck has the Hug set-back front wheel design, the front spring rocker, cam and lever steering gear and multi-cushion rear spring. The large body has reinforced sides and a double-acting tail gate.

## A New Tire for Tractor Service

**A** NOTHER new tire for tractor service, a pneumatic companion to the Goodrich Zero Pressure tire, has recently been announced by the B. F. Goodrich Co., Akron, Ohio. Known as the Tractor-Grader tire, this new product is of the lug type, designed for road service and constructed for hard knocks and severe driving torque. The tread design is self-cleaning, constructed to give clean positive sharp-edged gear wheel traction. The herringbone design insures straight forward motion and prevents side creep.

This tire is amply insulated with heavy gum coatings between each cord ply to eliminate the possibilities of bruises in severe service. Special consideration was given to the effect on tires of road oils and tar, resulting in a tread particularly adapted for use in building and maintaining tar-bound roads.



*One of the New Brookville Locomotive Company's Caterpillar Engine-Powered Industrial Locomotives. Brookville Has Standardized on Caterpillar Engines for Its Larger Sizes of Locomotives*

## A New Elevator Bucket

**A** NEW design of cast elevator bucket for heavy-duty work with reinforced lips and reinforced back and ends has been announced by Link-Belt Company, Indianapolis, Ind. This style AAP bucket is made in the following sizes: 8 x 5, 10 x 6, 12 x 7, 14 x 7, 16 x 8, and 18 x 8. It has a heavy back and heavy lip, reinforced corners, front reinforcing ribs and a reinforcing head around the ends. The middle of the lip is raised to reduce the digging strains and the bucket is made of Promol, a strong, long-wearing metal which is also more durable than malleable iron. The ribs down the front and the heavy flat bead around the ends offer added resistance to the bucket's being twisted out of shape under severe service, as in the handling of stone, sand and gravel.

## A New Steel Tape for Chain Work

**A** NEW steel tape made extra sturdy and designed especially for highway, railroad and other heavy work has been announced by The Lufkin Rule Co., Saginaw, Mich. This  $5/16$ -inch wide chain tape or "Hi-Way Drag Tape" is of special tough steel, of extra weight, and practically unbreakable. It has etched graduations, with black lines and figures and Nubian finish. The markings and figures are prominent and deeply cut into bright high portions of the line itself making them particularly readable even after much dragging of the tape. The tape is graduated to feet only,



*The New Lufkin Hi-Way Steel Tape*

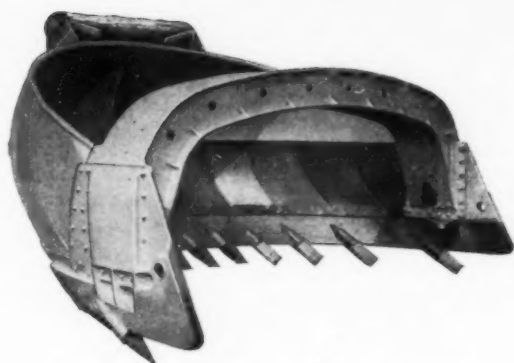
with the end feet graduated in 10ths and with the half railroad gage mark at 2 feet  $4\frac{1}{4}$  inches from zero. It can also be had with an extra foot before zero graded to 10ths. It has heavy brass end clips and a pair of rawhide thongs. It is made in lengths from 100 to 300 feet, and is furnished with or without a metal reel. A conversion rule is supplied with each "Hi-Way" tape. This is a handy 6-inch boxwood rule marked in 10ths and 100ths of feet on one side and inches to 16ths on the other side.

## A Combination Bulldozer and Backfiller

**A** HYDRAULICALLY operated bulldozer and backfiller which has been used in the west under extreme road construction conditions is being built by the Isaacson Iron Works, 2917 East Marginal Way, Seattle, Wash. These Isaacson Roadbuilders are built for Caterpillar, Allis-Chalmers and Cletrac crawler tractors.

The machines are controlled easily from the driver's seat by moving a lever which gives absolute control of the blade position at all times and under any conditions. The hydraulic unit has a distinctive pump assembly incorporating Timken bearings to minimize wear and assure trouble-free operation. The equalizer is of the latest design and construction and maintains the blade always in a horizontal plane and eliminates twisting of the frame. The hydraulic hoist holds the blade in any positive position or allows floating action when desired. A positive tilting angle of the blade can be maintained without twisting the main frame. The push load is taken on the drawbar in the rear of the tractor. The wearing parts of the Isaacson Roadbuilder are all replaceable and made of heat treated steel.





*The New 12-Cubic Yard Crescent Drag Scraper*

## A New Light-Weight Drag Scraper

**A** NNOUNCEMENT has been made recently by Sauerman Bros., 464 So. Clinton St., Chicago, Ill., of a new Crescent drag scraper of 12 cubic yards capacity, a feature of which is that the weight of this new bucket is less than the 10-cubic yard standard model.

The new bucket is of welded construction, with a cast-steel bail. The lip and end castings are of heat-treated alloy steel, providing strength and resistance to crystallization. Tapered tooth sockets are cast integral with the lip, and renewable tooth points are fitted into these sockets. Each tooth point is held in place by a single bolt with the head imbedded in the tooth casting. The tooth has an octagonal tang, permitting it to be inserted with the direction of face at the most advantageous angle.

## An Hydraulic Winder for Crawler Wagons

**A** N hydraulically-controlled door opening and closing mechanism for Trackson bottom-dump crawler wagons which supplements and does not replace the standard hand winding mechanism, which remains intact at the rear of the wagon for emergency use, has been announced by the Trackson Co., 1323 So. First St., Milwaukee, Wis. The hydraulic mechanism is installed on the front end of the body and is completely housed within a removable steel cover. Accessibility for renewal of door cables and adjustments is provided as well as automatic equalization of the door cable, eliminating sagging doors. Any stretch in the cable which would allow both doors to sag below their closed position can be removed by winding the surplus cable on the standard hand winding drum at the rear of the body. This takes only a moment's time and eliminates cutting off cable.



*A Bottom-Dump Crawler Wagon Equipped with Hydraulic-Wind Mechanism*

The hydraulic cylinder installed on the front of the wagon is actuated by an hydraulic pump connected to the tractor at the power take-off. A flexible hose connects the pump with the cylinder. The entire system operates at low pressure. The greatest amount of work performed by the pump is to close the doors which weigh about 500 pounds and which calls for relatively little pressure to be built up within the hydraulic system. All operations are controlled by the tractor operator, making it unnecessary to employ wagon winders. This system may be applied to wagons working singly or in tandem and pumps may be applied to all makes of tractors. When operating in trains of two, each wagon can be dumped independently of the other.

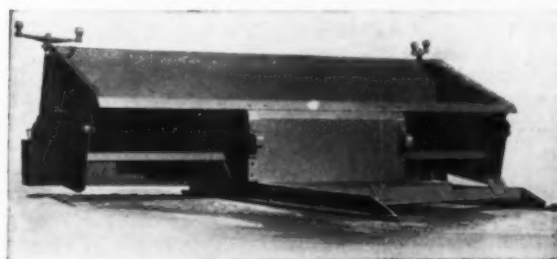
## A 70-Pound Paving Breaker

**A** NEW 70-pound paving breaker, known as B-72, has recently been announced by the Gardner-Denver Co., Quincy, Ill. This machine has the new Gardner-Denver tubular-type short-throw face contact valve which is claimed by the manufacturer to maintain efficiency indefinitely.

The air inlet is in the cylinder which, in combination with an air space between the handles and the head, keeps the handles cool. The air consumption of the B-72 is low, so that a class 120 portable compressor can operate two of these machines at an efficient working pressure. A sheeting driver attachment with adjustable jaws, removable foot rests and auxiliary holding handles is available. Only 1 1/4-inch clearance is required for driving a second course of sheeting.



*The New B-72 Paving Breaker*

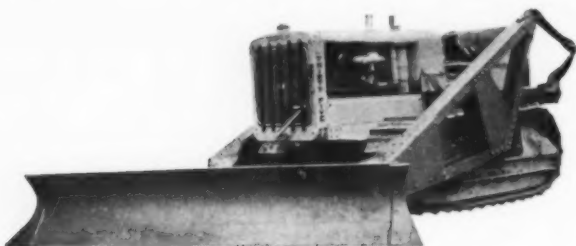


*The New Galion Asphalt Spreader with Extra Long Runners*

## A New Asphalt Spreader

**A** N asphalt spreader of the box type which is equipped with extra long runners to insure a uniform distribution of material has been announced by the Galion Iron Works & Mfg. Co., Galion, Ohio. While the spreader is designed especially for asphalt work it will handle stone, slag and concrete equally well. It is attached behind a truck by means of chains and covers a width of 9 feet. Adjustable gates at each end of the machine may be opened to allow materials to flow out to a greater width.

Extra long smooth runners insure level action of the spreader with a uniform distribution of material. The depth of spreading is controlled by a self-locking screw adjustment, which is easily and quickly operated, with handles at each end of the box. A four section strike-off blade below the spreader is made so that it can be adjusted to any desired crown of the road. The Galion spreader box is made in two sizes, 8 feet and 9 feet wide.



*The LaPlant-Choate Bulldozer and Road Builder Mounted on a Caterpillar Thirty-Five Tractor*

## A Bulldozer and Road Builder

**A** HYDRAULIC road builder or bulldozer for use on the Caterpillar Thirty-five tractor has been announced by the LaPlant-Choate Mfg. Co., Inc., Cedar Rapids, Iowa. The blade is 9 feet 4 inches long and is completely oscillating with adjustments provided so that either end can be locked into any position desired. The blade will oscillate up or down at 16 inches at either end. A sharp all-steel removable cutting bit is provided at each end of the blade. The blade can be set at an angle for backfilling or sidehill cutting work or it can be set straight across for use in bulldozing work. The blade has a 31-inch lift above ground level and can be forced into the ground 20 inches. The jack which forces the blade into the ground or raises it is double acting. The design of the bulldozer sets the tractor drawbar entirely clear.

## Diesel Engines for Construction Equipment

**T**HE diesel engine which has been developed by the Caterpillar Tractor Co., Peoria, Ill., for use in its diesel tractors, has recently been announced as a stationary unit for use in operating various types of construction equipment.

This engine has a  $6\frac{1}{8}$ -inch bore, a  $9\frac{1}{4}$ -inch stroke and is governed at 700 rpm, developing better than 85 horsepower. It has four cylinders, is four-cycle and uses the solid injection fuel system, and a pre-combustion chamber. The solid injection method of handling fuel on this engine is by means of individual pumps mounted on each cylinder. These are accurately calibrated and sealed at the factory, to preserve the intended settings under operating conditions. The fuel injectors have a single orifice of 0.086 diameter. A self-cleaning pintle keeps this orifice from clogging and maintains its prescribed dimensions. The fuel is first injected into a pre-combustion chamber where it is ignited by heat generated by high compression. The engine is provided with a positive starting mechanism, a small two-cylinder four-cycle gasoline engine, mounted on the side of the diesel itself. The engine is water-cooled, being connected to the diesel cooling system.

## A Shovel with a Shock Absorber

**A** ONE-PIECE solid shank shovel, equipped with what is known as a shock band, has recently been announced by the Ames Baldwin Wyoming Shovel Co., Parkersburg, W. Va. This shock band is a tubing 4 inches long, 2 inches of which is  $1\frac{1}{2}$  inches in diameter and the balance  $1\frac{1}{4}$  inches. The smaller 2 inches is fitted inside the shovel shank, thus giving a double thickness of metal in the area where the strain of pry and leverage centers. The larger diameter section

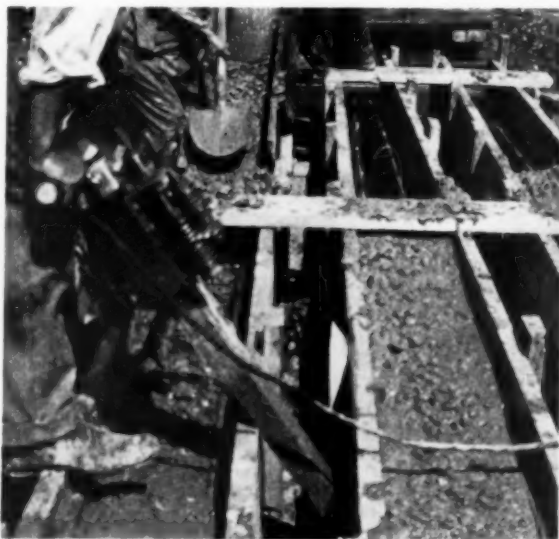
encases the wood above the socket so that the section of stress is completely armored. The shovel socket itself is welded at the seam so as to make a tube and give greater strength in itself. It is claimed by the manufacturer that this new shovel, because of these features, has a 21 per cent greater strength.

Another feature is the Armor-D handle. To the Northern Ash wood handle has been added an armor of steel that surrounds and locks the wooden fork. It supplies a smooth surface and is designed to provide protection against weathering, checking and splintering. Also it has ample room for a gloved hand.

## Electro-Magnet Vibrators for Concrete Forms

**I**T is quite common practice to deliver blows upon the exterior of a wooden form to compact the concrete for a thin wall as it is being placed, particularly when heavy reinforcing is used. A study of the vibrating of concrete to insure a dense mass has shown that shaking of the forms is preferable to heavy blows. The Syntron Co., Pittsburgh, Pa., has announced a new line of electro-magnet vibrators for vibrating concrete during construction work. This simple tool consists of a horseshoe magnet and an armature, the gap between the armature and magnet being held open by springs. By using the patented Syntron principle of a pulsating current, the gap between the magnet and its armature is closed 3,600 times per minute on a 60-cycle alternating current and the heavy mass of the armature moving at such a high speed sets up a powerful vibration that can be applied in a direct line toward any given mass which is to be vibrated. The vibrator is fitted with a handle and a vibrating spud for vibrating floor forms, flat slab placements or reinforcing bars in concrete products. Another attachment for the vibrators is a vise clamp for clamping the vibrators to the studs or wales of building forms. The third attachment is a chain clamp for attaching the vibrator to a round column or a round sewer pipe mold.

The largest vibrator, Model V-120, can be fitted with a puddling board for vibrating mass placement of concrete. These vibrators are built in various sizes for different applications, their main feature being in the simplicity of their design and construction, the freedom from moving parts and the fact that the flow of vibration can be directed in any desired line.



*A Syntron Vibrator with Spud for Use in Pouring Reinforced Concrete Piling*



*A WD Sharpener Reconditioning the Bit of a Well Drill at a Stone Quarry*

## A Sharpener for Well Drill Bits

**T**HE WD sharpener for well drill bits has recently been announced by Ingersoll-Rand Co., 11 Broadway, New York City. According to the manufacturer, actual reports from quarries indicate that the bits it produces effect a saving of from 50 to 61 per cent in drilling costs and 50 per cent in sharpening costs.

New bits can be forged on blank steels in two or three heats and dull bits can be redressed in one heat. The WD sharpener embodies the same fundamental principles of design and operation as the complete line of I-R sharpeners. It operates entirely by compressed air, all operations being controlled by a single throttle at a convenient position. At all times the work is in full view of the operator. A powerful cross head delivers the forging blows when forming the bit, and it clamps the steel while a dolly, actuated by a powerful cylinder, rapidly forges the face of the bit. The drill bit is upset in a cross head die, which firmly clamps the steel directly behind the bit. Water-channel swages are used to open the channel to the desired shape, thus eliminating the need of chipping or cutting away the metal. Bits up to 9-inch diameter on 6-inch by 4½-inch steels can be made on standard WD sharpeners, and dollies can be furnished to make any desired shape of bit.

## Metallic Zinc Paint for Protecting Metal

**T**RAVELERS in the Rhine Valley and other industrial regions of Europe have noticed bridges, towers, and other steel structures painted grey with a metallic zinc paint. In this paint which is now being used to an increasing extent in the United States, according to the American Zinc Institute, Inc., New York City, the principal pigment is a metallic zinc powder of such an extreme fineness that it is frequently referred to as zinc dust. This powder, produced by a distillation process in specially designed furnaces, is mixed with zinc oxide in a linseed oil vehicle of the usual type.

Metallic zinc paint has been found to be a particularly effective protection against corrosion for all exposed metal surfaces. It has been used not only on steel buildings and other structures, but on electrical equipment, on the inside and outside of water tanks and under many other difficult conditions. It has been found to fill a real need in the painting of galvanized iron or sheet zinc surfaces, due to its unusual ability to adhere to the surfaces which present an especially difficult problem for most paints. It has been used for some time as a priming coat on all police department traffic signs in New York City and has been used for the same purpose

on the Mt. Hope Bridge at Bristol, R. I. This great steel structure is subject to especially severe exposure, due to the prevalence of heavy salt fogs and variations in temperature.

## A New Portable Screening and Crushing Plant

**P**RODUCING road gravel which meets the specifications at a cost which will yield a profit has always been a serious problem to the gravel producer or contractor. The use of local pits is one of the best known methods of greatly reducing costs. However, in the face of many specifications requiring sized gravel and a certain percentage of crushed materials, the contractor now has the problem of needing more equipment to meet these specifications and still produce the gravel without excess cost.

A new crushing plant, designed to work in conjunction with a standard B-G bucket loader with vibrating screen, the two units forming a complete excavating, screening, crushing and loading plant which is self-propelled and portable, has recently been announced by the Barber-Greene Co., 485 West Park Ave., Aurora, Ill. With this unit it is possible to take advantage of short truck hauls by utilizing local pits, changing the source of supply as often as necessary.

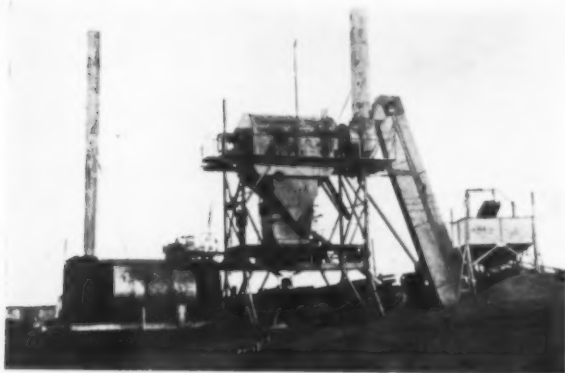
The loader with vibrating screen is a complete unit in itself, having its own gasoline engine which drives the crawlers as well as the buckets and screen. The crushing plant is towed behind the loader and has its own engine which drives the crusher and the conveyors. The plant can work directly into the bank or into the stockpile, and the entire machine moves forward as the material is excavated. The spiral feeder carries the material to the buckets which elevate it and discharge onto the double deck vibrating screen. The oversize passing over the screen flows through a gravity chute to the crusher. The crushed materials are sent back to the feeding end by a belt conveyor on the crusher unit. The material that passes the top deck and not the second deck flows down to the hopper of a conveyor that carries the correctly-sized material out to the trucks. The fines passing the second deck are carried to one side by a cross conveyor that is part of the screening unit. These can be allowed to pile on the ground or be received by trucks as desired. Only one operator is required. Although the capacity of this type of plant is variable, being dependent on the percentage of fines, oversize and required size in the bank, it has proved its ability to handle from 40 to 50 cubic yards per hour of sized material delivered to trucks.

Where only screened material is required, the bucket loader and screen do the work, and if only bank-run material is wanted, the screen drive may be disconnected and a veil plate placed over the top deck. The entire plant moves under its own power without dismantling.



*The New Barber-Greene Portable Screening and Crushing Plant*





*A Typical Madsen Blaw-Knox Mobile Asphalt Plant*

## A Mobile Three-Unit Asphalt Plant

**M**OBILE asphalt plants consisting of three units, the mixing unit, the asphalt heating unit and the boiler unit designed by the Madsen Iron Works, Los Angeles, Calif., are now manufactured by the Blaw-Knox Co., 2067 Farmers Bank Bldg., Pittsburgh, Pa., for sale in territories in the United States east of the Rocky Mountains and in countries outside of the United States. These plants prepare and mix the material for all types of asphalt, bituminous concrete, oil mix and cold-laid pavements. The entire plant is fully portable and is transported on a set of wheels interchangeable between three units, furnished as standard equipment.

Each of the three units is so designed that the frame members act as the chassis on which they are moved. This design allows the permanent mounting and alignment of all operating parts and obviates the time-consuming tearing-down and subsequent assemblies. The mixing unit proper comprises the general assembly of the elevator dryer and screen, aggregate bin, aggregate weigh-box, asphalt-weighing equipment, twin shaft pug-mill mixer, and electric power drive. For diesel or gasoline engine drive the power unit is separate. At each of the four corners of the upper platform a ratchet-operated jack is built in. The dryer-screen and mixer units are raised or lowered on the corner columns by operating these jacks. Thus these heavy units are easily handled, raised or lowered without necessity for a crane or other hoist.

The asphalt heating unit is of sufficient capacity to insure a continuous supply of hot bituminous material under any present specifications. The heating unit comprises equipment which is modern and unique in design. The boiler is constructed in accordance with A.S.M.E. specifications for a working pressure of 150 pounds and is permanently mounted on a steel frame on which it is operated and transported. It is thoroughly insulated and completely equipped.

A feature of the Madsen Blaw-Knox asphalt plant is the asphalt gun. This is a steam-ram operated injector which forces a weighed quantity of asphalt cement into the mixer when the operator moves the control valve.

The plant is completely operated by three men, one of whom controls the mixer and other plant functions including the aggregate gate levers, the weigh-box discharge, the charging of the bituminous oil, the mixer discharge and other functions at the plant proper. The fireman, in addition to tending the boiler, also supervises the heating of asphalt and the transfer of asphalt from delivery trucks or storage to the heating unit. The handy-man oiler also acts as relief mixer man and tends the dryer and screen unit on the top platform.

The mobility of this plant is clearly indicated through a recent report received by the manufacturer from a prominent

contractor in Minnesota. This contractor moved his entire plant 65 miles, beginning his dismantling on Friday morning and on the Monday following, at noon, was actually mixing materials for the new contract.

## A New Half-Yard Excavator

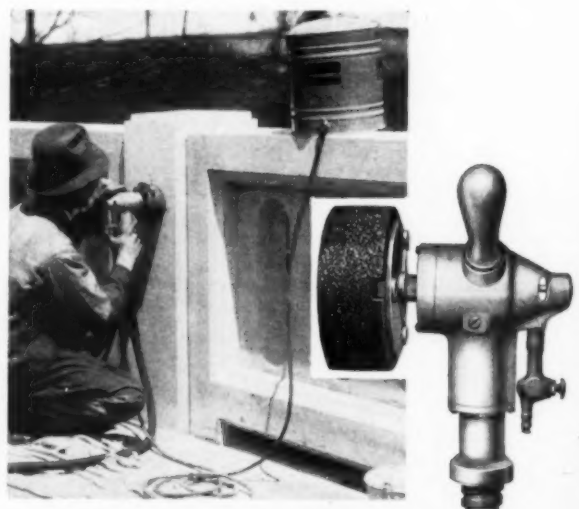
**A** NEW  $\frac{1}{2}$ -yard excavator, known as the 16-B, which combines greater digging ability per pound of weight, has recently been announced by the Bucyrus-Erie Co., South Milwaukee, Wis. Its weight is under 30,000 pounds and its large 6-cylinder engine develops 54 horsepower.

Among the features of this new machine are conical swing rollers rolling between two roller paths, eliminating a center pintle, the elimination of dead weight, no dead counterweight, chain crowd with high speed retraction, unit assembly, single-shaft drive mounting, all clutches interchangeable, all welded box-girder boom and outside sticks, and an efficient digging and free-dumping inserted-tooth dipper. A choice of gasoline, diesel or electric power is available. The machine is readily convertible for use as a shovel, dragline, clamshell, crane, drag shovel or skimmer scoop.

## A New Machine for Wet-Rubbing Concrete Construction

**A** NEW surfacer for wet-rubbing all kinds of concrete construction, known as the Berg water-feed concrete surfacer, has recently been announced by the Concrete Surfacing Machinery Co., 4559 Spring Grove Ave., Cincinnati, Ohio. This machine not only displaces hand rubbing but also does away with the necessity of wetting the surface with a brush.

A number of features have been incorporated in this machine, including the water control valve at the thumb of the operator and the water outlet in the center of the carbo-disc, as well as the fact that water can not enter the gear housing. This surfacer can be furnished as a complete machine, consisting of the water-feed head and any one of the Berg motor units, or just the water-feed head, known as Berg Model W, may be purchased as an attachment for Berg concrete surfacers now in use.



*The New Berg Water-Feed Surfacers for Wet-Rubbing Concrete*



# Send for this FREE LITERATURE

These especially selected catalogs and pamphlets of value to contractors are for free distribution. You will find it worth while to check these lists each month and write for the catalogs you need.

## Lights for Night Work

**100** V-G carbide lights which give daylight conditions on night jobs, spread a full even beam of 8,000 candlepower where it is needed, and light up the job for twelve hours on one 7-pound charge of National 14-ND carbide and 7 gallons of water, are described in literature which the National Carbide Sales Corp., Lincoln Bldg., New York City, will be glad to send on request.

## A New Complete Line of Bituminous Machinery

**101** Chausse Oil Burner Co., Elkhart, Ind., will be glad to send to those interested descriptive literature covering the new complete line of Chausse bituminous road and street machinery for making hot and cold mixes, including road mix pavers, central cold mixing plants, pug mill mixers, pre-mix plants, driers for sand and stone, street repair patchers, asphalt plants, tar kettles and surface and tool heaters.

## Asphalt Planking for Bridges

**102** Complete information in regard to Serviced fibrated asphalt planking for bridge installations, as well as asphalt expansion joints, may be secured by interested contractors from Serviced Products Corp., 6051 West 65th St., Chicago, Ill.

## Engines for Construction Equipment

**103** Dependability and long years of service are two of the features for which Continental engines for construction equipment are designed. Complete information in regard to these engines and the type of service they render in the field of construction may be secured from Continental Motors Corp., Detroit, Mich.

## Construction Equipment

**104** McKiernan-Terry Corp., 19 Park Row, New York City, will be glad to send to interested contractors literature describing its line of construction equipment, including pile hammers and extractors, hoists, derricks, whirlers, cableways and bridge operating machinery.

## A New 3-Way Wagon

**105** Complete information in regard to the new Euclid 3-way dump wagon, features of which are the Euclid double coil spring axle brackets to eliminate severe loading shocks, heavy frame construction, a body designed for easier spotting, and a mounting on 20-ton Permo-Arch track wheels, may be secured by interested contractors from the Euclid Road Machinery Co., Cleveland, Ohio.

## Orange Peels for Dredging

**106** Hayward Co., 32-36 Dey St., New York City, will be glad to send to interested contractors complete information in regard to Hayward orange peel buckets for dredging, digging canals and sewers, sinking bridge piers and similar work.

## Corrugated Metal Culverts

**107** Complete information in regard to Gohi corrugated culverts, made of copper-bearing pure iron which meets all accepted specifications for corrugated metal culverts, may be secured by those interested from Gohi Culvert Manufacturers, Inc., Newport, Ky.

## Single-Stage Centrifugal Pumps

**108** Class LS single-stage centrifugal pumps designed to meet demands for compact self-contained pumping units of high efficiency built in sizes from 1/2 to 4 inches for capacities up to 700 gpm and heads up to 75 and 85 feet at 1,750 rpm, depending on the size; also for high heads at 3,600 rpm up to a maximum of 20 horsepower, are described in Bulletin 218 issued by the Pennsylvania Pump & Compressor Co., Easton, Pa.

## All-Steel Hand Hoists

**109** Beebe all-steel hand hoists which have a straight-line capacity of 5 tons with two speeds of 4 to 1 and 24 to 1 are described in literature which Beebe Bros., 2724 Sixth Ave., So. Seattle, Wash., will be glad to send on request.

## Expansion Joints for Concrete Paving

**110** Literature describing Carey Elastite expansion joints, the sandwich joint which protects concrete paving against expansion and contraction stresses, may be secured by interested contractors from the Philip Carey Co., Dept. E-1, Lockland, Cincinnati, Ohio.

## Frost Free Air-Lines

**111** Sullivan Machinery Co., 400 North Michigan Ave., Chicago, Ill., will be pleased to send complete information about Tanner-tanks, an anti-freeze air-line system which is simple, foolproof, suited to all conditions, and which guarantees the prevention of freezing troubles in your compressed air lines during the winter.

## A Mobile Asphalt Plant

**112** An illustrated bulletin describing Madsen Blaw-Knox asphalt plants for pre-mixing asphaltic pavement materials and consisting of three units: the mixing unit, the asphalt heating unit and the boiler unit, will be sent to municipal officials and contractors interested in portable plants of high efficiency, by writing direct to the Blaw-Knox Co., 2067 Farmers Bank Bldg., Pittsburgh, Pa.

## A Shovel with a Shock Absorber

**113** The A B W one-piece solid shank shovel, features of which are the shock hand and the Armor-D handle which are designed to give greater strength and wearing qualities is described in literature which the Ames Baldwin Wyoming Shovel Co., Parkersburg, W. Va., will be glad to send on request.

## A New Light-Weight Drag Scraper

**114** Complete information in regard to the new Crescent drag scraper of 12-cubic yard capacity, a feature of which is that the weight of this new bucket is less than the 10-cubic yard standard model, may be secured by those interested from Sauerman Bros., 464 So. Clinton St., Chicago, Ill.

## A Complete Line of Shovels, Spades and Scoops

**115** Catalog No. 32 covering the complete line of shovels, spades and scoops made by the Shovel Plant of The American Fork & Hoe Co., Shovel Division, 1623 Euclid Ave., Cleveland, Ohio, embodies not only complete detailed descriptions of the various grades, list number, sizes, etc., but also other valuable information which should be of real service to contractors. The illustrations are true to life reproductions of the True Temper products listed.

## An Automatic Air-Control Valve

**116** An automatic air-control valve which permits definitely limited quantities of air to pass at various pressures, the quantity varying directly as the pressure, is being manufactured by the Varnell-Waring Co., Philadelphia, Pa. It is designed to prevent waste of air in the operation of pneumatic jack hammers, paving breakers, pneumatic riveters and for other work involving air pressure.

## A New Heavy-Duty Tractor

**117** Cleveland Tractor Co., Cleveland, Ohio, will be glad to send to interested contractors complete information in regard to the new Cletrac 80, features of which are electric starting equipment, radiator guard, crankcase guard, front pull hook and 83 horsepower at the draw-bar.

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### An Electric Backfill Tamper

**118** The Jackson electric backfill tamper which delivers 1,800 heavy blows a minute for field use and is operated by a compact light weight gas electric power unit is described and illustrated in the literature of the Electric Tamper & Equipment Co., Ludington, Mich.

### A Combination Drum and Capstan Car-Puller

**119** A new drum and capstan car-puller for spotting a train load of aggregate cars uses a steel cable on the drum for handling a haul of 900 feet and under. For shorter pulls of less than 300 feet, the horizontal capstan is used with manila rope. This car-puller, which is made by the Fridy Hoist & Machinery Co., Mountville, Pa. and is described in its literature, is made in 10, 15 and 20-horsepower motor ratings for handling a train of 500 tons and under on a slight grade.

### Improved Vertical Gas Engines Convertible to Diesels

**120** An improved line of vertical 4-cycle gas engines covering an unusually wide power range in a variety of cylinder combinations recently has been announced by the Worthington Pump & Machinery Corp., Harrison, N. J. These engines are built with 1 to 8 cylinders and 30 to 150 horsepower per cylinder. These engines, described in literature which may be secured from the manufacturer, can be readily converted to diesels at moderate expense, if it becomes necessary or desirable to substitute oil for gas as a fuel.

### A New Oversize Crawler Mounting for Draglines

**121** Complete information in regard to the new oversize crawler mounting for the Bucyrus-Erie 52-B gas and diesel dragline which is designed to provide greater stability when the dragline is operated on soft bottom, may be secured by those interested from the Bucyrus-Erie Co., South Milwaukee, Wis.

### An Oil Burning Jacketed Water Heater

**122** Littleford Bros., 485 E. Pearl St., Cincinnati, Ohio, will be pleased to send an illustrated description of the L.B. oil burning jacketed water heater in which the water passes three times in close contact to the circular oil burner. This heater produces 300 gallons per hour at 175 degrees Fahrenheit for use as concrete mixing water in winter.

### New Speed and Power for Pipe Handling

**123** The Trackson Co., 1323 So. First St., Milwaukee, Wis., and the Highway Trailer Co., Edgerton, Wis., have jointly issued a folder on the new Trackson-Highway pipe layer which is a combination of the Trackson McCormick-Deering crawler tractor and the Highway boom for pipe handling.

### Transits and Levels

**124** A booklet on popular types of transits and levels in general use by engineers, surveyors and contractors and giving full information on the sizes and styles of these instruments may be secured by those interested from C. L. Berger & Sons, Inc., 37 William St., Roxbury, Boston, Mass.

### Handling Material with Belt Conveyors

**125** A booklet, "How Shall We Handle It?" has been issued recently by the Diamond Rubber Co., Inc., Akron, Ohio, in which conveyor belt problems in many industries, the advantages of the belt conveyor, details of belt construction and suggested applications, are discussed. This profusely illustrated booklet may be obtained on request to the manufacturer.

### Additions to Truck Line

**126** Reo Motor Car Co., Lansing, Mich., will be glad to send to those interested complete information in regard to two new models which were recently announced, a 6-cylinder Gold Crown engine 2-ton model and a new 8-cylinder 4-ton truck, both of which have a number of new and distinctive features.

### A 9-Yard Carry-All Scraper

**127** Literature describing the LeTourneau 9-yard carry-all scraper which is designed to pick up a large load and carry it in high gear, is of all-welded steel construction, with an average capacity of 9 yards, may be secured by interested contractors from R. G. LeTourneau, Inc., Wilson Way and Roosevelt Ave., Stockton, Calif.

### Rock Drills and Sharpeners

**128** This is the title of a 32-page illustrated booklet covering the entire line of Ingersoll-Rand equipment for drilling rock and reconditioning drill steel as well as all accessory equipment and instructions for correctly heat treating drill steel. Copies of this catalog, Form 4101, may be secured by those interested from the Ingersoll-Rand Co., 11 Broadway, New York City.

### An Asphalt Emulsion for Pavement Construction

**129** Bitumuls H, an asphalt emulsion which is designed for the construction of economical, sound and easily-laid pavements, is described in Bulletin No. 1 which the American Bitumuls Co., 200 Bush St., San Francisco, Calif., will be glad to send on request.

### Hydraulic-Controlled Motor Graders

**130** Bulletin No. 136 issued by the Galion Iron Works & Mfg. Co., Galion, Ohio, describes and illustrates Galion motor graders with hydraulic power control and furnished with either McCormick-Deering, Case or Case tractor power.

### Protecting Concrete Corners with Metal

**131** Armored Concrete, a construction composed of concrete and grey cast iron so bonded as to become an absolute mechanical unit and protect the stone from damage under impact, abrasion, corrosion, and temperature and moisture variations, is described in Catalog 111 and other literature of B. Nicoll & Co., Inc., 292 Madison Ave., New York City.

### Diesel Engines for Construction Equipment

**132** Complete information in regard to the Caterpillar diesel engine, which was developed for use in diesel tractors and which has recently been announced as a stationary unit for use in operating various types of construction equipment, may be secured by those interested from the Caterpillar Tractor Co., Peoria, Ill.

### Rock, Sand and Cinder Crushing Machinery

**133** New Holland rock, sand and cinder crushing machinery, including pulverizers, screens, elevators, conveyors and feeders as well as fully equipped crushing plants, are described in Catalog No. 32 which the New Holland Machine Co., New Holland, Penna., will be glad to send on request.

### Addition to Line of Pumps

**134** A complete description of the new Novo 2-inch self-priming centrifugal pump, which has recently been added to the line of Novo centrifugals and which has a capacity of 7,500 gph at a 15-foot lift and a total head of 55 feet, may be secured by interested contractors from the Novo Engine Co., 216 Porter St., Lansing, Mich.

### All-Wheel-Drive Motor Trucks

**135** Marmon-Herrington Co., Indianapolis, Ind., will be glad to send to those interested complete information in regard to the Marmon-Herrington Model T H-300-4, which has a rated capacity of 3 1/2 to 4 tons, drive through both front and rear wheels, dual type rear wheels and is powered by a six-cylinder 94-horsepower engine.

### Book on Steel Chains

**136** An illustrated 144-page catalog describing the complete line of Link-Belt chains from the small detachable steel No. 25 size to the powerful chains with a strength of 1,500,000 pounds, and including roller chains, engineering chain, block-type and draw bench chain, balance chain, steel ice chain, drop-forged rivetless chain and others, may be secured by interested contractors and engineers who write to Link-Belt Co., 910 So. Michigan Ave., Chicago, Ill., and request Book No. 1192.

### A Gyrotory Rock Crusher

**137** Bulletin No. 111 describing the Traylor Type BH gyrotory rock crusher, among the features of which are the Traylor bell head and curved concaves, a self-tightening non-stripping suspension nut, dust seal and positive and an entirely automatic lubrication system, may be secured by those interested from the Traylor Engineering & Mfg. Co., Allentown, Penna.

### A Dragline Bucket for Use on Levees and Similar Jobs

**138** The new improved Williams DL dragline bucket, which has a number of new features and improvements and which is specially designed for the severe service of levee construction, is described and illustrated in literature which the Wellman Engineering Co., 7012 Central Ave., Cleveland, Ohio, will be glad to send on request.

### A New Centrifugal for General Pumping Service

**139** Lawrence Pump & Engine Co., P. O. Box 70, Lawrence, Mass., in Bulletin D-45 describes the Type E Electropump, a compact, efficient, low-cost centrifugal for small and moderate capacities for operation against heads up to 150 feet, or 65 pounds in a single-stage unit, and designed for circulating hot and cold water or brine, for water supply systems and booster service, low pressure boiler feedings, air conditioning apparatus, swimming pools, golf courses and general service.

### A Front End Fresno Loader and Bulldozer

**140** The Anthony multiple tool digger for Caterpillar Twenty-Five tractors is so built that with a simple interchange of parts it may be used as a front end fresno, a wagon loader or a bulldozer. Further information, prices and complete description with illustrations may be secured from the Anthony Co., Inc., Streator, Ill.

### A Modern Alloy for Culverts

**141** "The Path to Permanence," second edition, issued by Republic Steel Corp., Youngstown, Ohio, discusses and illustrates the use of Toncan copper molybdenum iron known as Toncan iron for ducts, ventilators, roofs and the severe services of culverts.

### A Full-Revolving Truck Crane

**142** The Hyster truck crane, among the features of which are all steel construction, full circle swing, three hoisting speeds, three rotating speeds and a 1/2-yard bucket capacity, is described in Bulletin No. 206 which the Willamette-Ersted Co., Portland, Ore., will be glad to send on request.

### Asphalt Paving Tools

**143** Bulletin No. 6 A describing Iroquois asphalt paving tools, including tampers and smoothers, rakes, patching hoes, cutters, shovels, melting and pouring pots, stone and binder forks, patrol kettles, fire wagons, hand rollers and surface heaters, may be secured by those interested from the Barber Asphalt Co., Iroquois Dept., Philadelphia, Penna.

### A Spray Outfit for Concrete Curing

**144** The Aerol power spray outfit designed for use in curing concrete roads, which is mounted on two 24-inch diameter rubber-tired wheels and is powered by a 2 1/2-horsepower air-cooled gasoline engine, is described in literature which interested contractors may secure from the Aerol Burner Co., Inc., West New York, N. J.

### A New Heavy-Duty Elevating Grader

**145** The new Adams elevating grader No. 11 which has a new frame, front axle and plow beam design, a 48-inch carrier with both the carrier and plow controls power-operated, is fully described in literature which the J. D. Adams Co., Indianapolis, Ind., will be glad to send on request.

### A New 2-Inch Centrifugal Pump

**146** A complete description of the new Marlo 2-inch self-priming pump, designed on the same lines as the larger Marlo pumps and which weighs only 110 pounds, has a capacity up to 80 gpm, suction lifts up to 25 feet and total suction and discharge up to 30 feet, may be secured from Marlow Pumps, Ridgewood, N. J.

### Rust-Proof Hose Couplings

**147** Super strength Boss hose couplings which are designed for durability, long life and economy and which are rust-proof are described in literature which the Goodall Rubber Co., Philadelphia, Penna., will be glad to send on request.

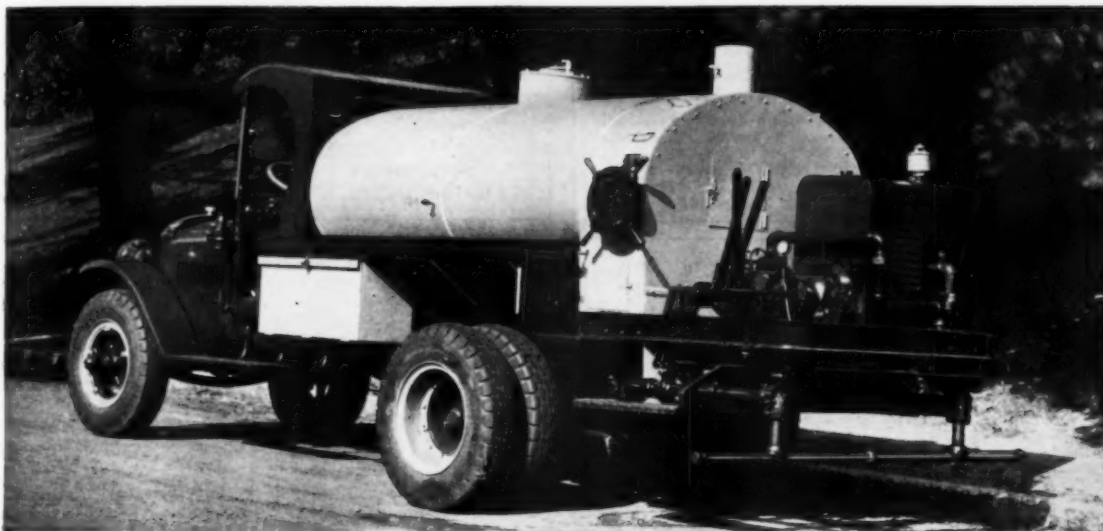
### Estimating Chart for Waterproofing Materials

**148** An estimating chart of Sonneborn products for water and damp-proofing floors, concrete structures and similar purposes may be secured by interested contractors from L. Sonneborn Sons, Inc., 88 Lexington Ave., New York City.

### Hydraulic Dredges and Dredging Equipment

**149** Ellicott Machine Corp., Baltimore, Md., will be glad to send to those interested its literature describing and illustrating Ellicott hydraulic dredges and dredging machinery of all sizes and types to meet the various requirements of contractors engaged in this type of work.

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# Contractors and Engineers Monthly

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The following cards (arranged by states) show the names of dealers in contractors' equipment and supplies, with a record of the various lines handled. Canadian cards appear on page 69.

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Brown Marx Bldg. Birmingham, Ala.

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ROBINS—Belt Conveyors and Screens  
ALDRICH—Power Driven Pumps  
FOSTER-WHEELER—Pulverized Coal Equipment, Superheaters, Condensers and Boilers.  
LO-HED—Electric Hoists  
INDUSTRIAL BROWNHOIST—Locomotive Cranes  
CLEVELAND—Cranes  
WHITCOMB—Locomotives

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N. W. Corner of St. Louis & Commerce Sts. MOBILE ALABAMA

##### Representing

McKIERNAN-TERRY CORP.—File Hammers  
INDEPENDENT PNEUMATIC TOOL CO.—"Thor" Tools and Compressors  
WILLIAMS—Clamshell and Dragline Buckets  
ORR & SEMBOWER—Concrete Mixers & Hoists  
AMERICAN STEEL & WIRE CO.—"Monitor" Wire Rope  
DOMESTIC—Pumps and Hoists  
M & M Form Clamps  
WYOMING SHOVEL CO.—Red Edge Shovels, Scoops  
LINK-BELT CO.—Crawler Cranes, Shovels, Loaders  
WESTERN WHEEL SCRAPER CO.—Wheeled Drags, Scrapers, Fresnoes, Ploughs  
BATES—Bar Tie  
JAEGER-LAKEWOOD—Concrete Mixers, Paving Equip., Chuting Equip.  
BEEBE BROS.—Hoists and Saws

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McCORMICK-DEERING Industrial Tractors, Engines  
INTERNATIONAL Motor Trucks  
BAY CITY Shovels, Cranes, Draglines  
ORD Concrete Finishing Machines  
MUNICIPAL Sprinklers, Flushers, etc.  
STERLING Hoists, Contractors' Pumps  
AMERICAN "Tru-Ray" Wire Rope  
SPEARWELL Oil Distributors  
BROOKVILLE Locomotives  
POMONA Turbine Pumps  
MYERS Pumps

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1625-31 Ave. B. So. Birmingham, Ala.

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BAKER "Baker Maney" Self-Loading Scrapers  
EYERS Full-Revolving Shovels and Cranes  
CHAIN BELT "Rex" Mixers, Pavers, Pumps, Saw Rigs, Etc.  
DIXOYL Lubricating Greases  
GALION Road Graders and Machinery  
HAISS Loaders and Conveyors  
HEIL Hoists and Bodies  
HERCULES Engines  
HVASSE Heavy Duty Trailers  
IOWA Screening and Crushing Plants  
TOLEDO Torches  
TRACKSON Crawlers, Shovels and Hoists  
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238 W. Jefferson St. Phoenix, Ariz.

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ATHEY Truss Wheels  
BUFFALO-SPRINGFIELD Rollers  
DAY Crushers  
HEIL Hoists  
KILLEFER Road Tools  
LAPLANT-CHOATE Snow Plows  
LITTLEFORD Asphalt Equipment  
PACIFIC Wire Rope  
SPEEDER Shovels  
WILLAMETTE-ERSTED Hoists  
EUCUD Earth Moving Equipment

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Little Rock Arkansas

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NATIONAL STEEL FABRIC CO.—Wire Mesh  
MILWAUKEE CORRUGATING CO.—Lath and Building Products  
MAJESTIC CO.—Coal Chutes and Building Products  
IRVING IRON WORKS—Subway Grating  
CARTER BLOX-ON-END FLOORING CO.—Industrial Wood Flooring  
LINDE AIR PRODUCTS CO.—Purco Welding and Cutting Equipment  
DETROIT STEEL PRODUCTS CO.—Penetra Steel Sash and Holorib Roof  
SAINO MANUFACTURING CO.—Automatic Fire Doors  
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Structural and Reinforcing Steel and Steel Building Products

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Tractors and Road Machinery

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SPEEDER—Full Revolving Shovels, Draglines  
EMPIRE—Cutting Edges, Wheelbarrows, Carts  
EUCUD—Crawler Dump Wagons, Power Scrapers  
ATLAS—Rotary Wheel-type Scrapers, Fresnoes  
LAKEWOOD—Finishers, Sub-grading, Machinery  
BLAW-KNOX—"Ball" Wagon Graders  
KILLEFER—Road Tools, Agricultural Implements  
TOWERS & SULLIVAN—Agricultural Implements  
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Butty Back Fillers & Bulldozers  
Erie Road Rollers  
General Shovels, Cranes, etc.  
Gardner - Denver Portable Compressors, Jack Hammers, etc.  
Gorcon Spreaders  
Huber Road Rollers  
Jaeger Concrete Mixers, Pavers, Hoists  
Jumbo Wheel Scrapers  
Le Tourneau Heavy Grading Equipment  
Lima Shovels and Draglines  
Madison Portable Paving Plants  
Master Rotary Scrapers  
Milwaukee Gas Locomotives  
Morton Dirt Movers  
Pioneer Crushing, Screening and Loading Plants  
Snow King Rotary Snow Plows

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RED STAR—Wheelbarrows, Concrete Carts  
NOVO—Hoists, Etc.  
UNION—Wire Ropes  
WAUKESHA—FULLER & JOHNSON—LEROI—Engines  
BATES—Bar Ties  
P & H—Power Shovels, Cranes and Draglines  
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LINN Tractors  
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HUBER Road Rollers  
CEDAR RAPIDS Crushers, and Gravel Plants  
SIDNEY Steel Scrapers, Wheelbarrows, Tools  
SCHRAMM Air Compressors, Drills, Tools, Etc.  
WICKWIRE-SPENCER Wire Mesh and Cable  
RIDDELL Maintainers  
ALLIS-CHALMERS Tractors and Equipment  
LITTLEFORD Asphalt Hosts  
TRACKSON Crawlers, Hoists

For Canadian Distributors, see page 69

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49th St. & Santa Fe Ave. Los Angeles, Cal.

### Distributors

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Barnes Pumps  
Bay City Truck Cranes  
Buckeye Trench Machines  
Burth Stone Spreaders  
Carter Pumps  
Wardner Concrete Mixers  
Continental Engines  
Excld Wagons & Scrapers  
Plymouth Locomotives  
General Shovels, Cranes

Halsa Loaders, Conveyors  
Huber Gas Rollers  
Lidgerwood Hoists, Cable-ways  
Link Belt Shovels, Cranes  
Littleford Asphalt Heaters  
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Page Dragline Buckets  
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JUMBO Scrapers  
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AUSTIN—Trenchers and Backfillers  
LEACH—Mixers, Pavers, Saw Rigs  
ROLLER BEAR—Rock Crushers  
CLIMAX—Engines and Power Units  
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CLYDE Hoists & Derricks  
GARDNER-DENVER Compressors  
HANDY Sack Cleaners and Balers  
TRACKSON Crawlers, Shovels

HOMELITE Pumps and Generators  
HOTCHKISS Road Forms  
INTERNATIONAL Industrial Tractors  
LE ROI Engines  
PARSONS Excavating Machy.  
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FREEMAN—Turntables  
GALION—Graders, Rollers  
HERCULES—Power Units  
JAEGER — Mixers, Hoists, Pumps, Tower Equipment  
JOHNSON—Bins, Hoppers  
LAKEWOOD—Road Finishers, Forms, Chuting, etc.  
CLEVELAND Crawler Tractors

MACWHYTE—Wire Rope  
MOHAWK—Asphalt Heaters  
MULTIFOOTE—Pavers  
SAUERMAN—Cableway Excavators, Power Drag Scrapers  
SCHRAMM—Compressors  
SIMPLEX—Trench Braces  
SKILSAW—Portable Electric Saws  
THEW—Shovels and Cranes  
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UNIVERSAL—"35" Shovels and Cranes

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2900 Sante Fe Ave. Los Angeles, Cal.

### Southern California Distributors

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Osgood Co. — Shovels, Cranes, Hoes  
Buffalo-Springfield Co. — Rollers  
Hetzl Steel & Iron Co. — Bins, Batches, Road Forms  
Nevo Engine Co. — Engines, Hoists, Pumps  
Morton — Scrapers, Dirt Movers  
Sullivan Machinery Co. — Air Compressors  
Mack Wooldrige Co. — Backfillers, Bulldozers  
D-A — Lubricants

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522 Bryant St. San Francisco, Calif.

### Northern California Distributors

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Chausses Oil Burner Co.—Portable Asphalt Plants, Kettles, Surface Heaters  
Greyhound—Contractors Portable Saws  
Milwaukee Locomotive Co.—Gasoline Locomotives  
Spooder Machy. Corp.—Shovels, Cranes, Draglines  
Hetzl Steel Form & Iron Co.—Bins, Batches & Road Forms  
Ames Iron Works—Gasoline Road Rollers  
Union Iron Works, Inc.—Pile Hammers & Foundation Equip.  
Automix, Inc.—Motor Truck Concrete Mixers  
Greiman Ditcher Co.—Ditchers and Trench Supporters  
Flasher & Hayes Rope & Steel Co.—Concrete Form Devices  
N. P. Nelson Iron Works—Loaders & Conveying Equipment

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### Southern California Distributors for

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BROWNING CRANE & SHOVEL CO.—Shovels, Cranes  
DOMESTIC ENG. & PUMP CO.—Road Builders & De-watering Pumps  
RANSOME CONCRETE MACHY. CO.—Conc. Placing Eq. Concr. Mixers, Pavers, Pneu. Concr. Placers, Grouters  
A. LESCHEN & SONS ROPE CO.—Wire Rope  
McKIERMAN-TERRY CORP.—Pile Hammers, Lambert-National Hoists, Cableways, Whirlers  
WORTHINGTON—Portable Compressors, Jackhammers, etc.  
MALL TOOL CO.—Concrete Surfaceers  
DOBBIE—Derrick & Derrick Fittings

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Byars Shovels and Cranes  
Cedar Rapids Crushers  
Cleveland Trenchers  
Dobbie Winches and Derricks  
Easton Industrial Cars  
Freeman Turntables  
Hercules Power Units  
Homelite Pumps  
Huber Rollers  
Jaeger Concrete Mixers  
Johnson Bins and Batches  
Lakewood Finishers

Lidgerwood Hoists  
Midwest Locomotives  
McKierman-Terry Pile Hammers  
McCormick-Deering Tractors  
M & M Wire Clamp Co.  
Multi Foote Road Pavers  
Northern Conveyors  
Ohio Loco. Cranes and Tractor Dump Wagons  
Schramm Air Compressors  
Templeton Kerly Jacks and Trench Braces  
Toledo Torches and Hornes  
Trackson Crawler Tractors

Member: Associated Equipment Distributors

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Davey Compressor Co.

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## CONTRACTORS AND ENGINEERS MONTHLY

470 Fourth Avenue New York

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400 Seventh St. San Francisco, Calif.

### Representing

LE ROI CO.—Gasoline Power Units  
MINNEAPOLIS STL. & MACHY. CO.—Twin City Engines  
ARCHER IRON WORKS—Concrete Placing Equipment  
DAVIS CO.—Mixers, Hoists, Motor Truck Concrete Transfer Systems, Readymix Concrete Plants  
DIAMOND IRON WORKS—Saw Mill, Rock Crushing, Screening, Conveyor and Transmission Machinery  
HANSON CLUTCH & MACHY. CO.—Excavators  
O. K. CLUTCH & MACHY. CO.—Hoists, Air Compressor  
KEYSTONE DRILLER CO.—Shovels, Skimmers, Pulleys, Well Drilling Machy., Tools

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## ROY C. WHAYNE SUPPLY CO.

8th & Main Sts. Louisville, Ky.

"CATERPILLAR" Tractors  
"CATERPILLAR" Road Machinery  
**JAEGER** Concrete Mixers  
**HELTZEL** Steel Forms  
**BARNES** Pumps  
**DAVEY** Air Cooled Compressors  
**HARDSOOG** Drills  
**CHICAGO AUTOMATIC** Conveyors  
**NORTHWEST** Shovels, Cranes and  
Draglines  
**BUOLID** Scrapers, Wagons  
**ATHEY** Wagons  
**LA PLANT-CHOATE** Bulldozers  
**GOOD ROADS** Crushers, Screens,  
Elevators  
Member: Associated Equipment Distributors

## EQUITABLE EQUIPMENT CO. Inc.

410 Camp St. New Orleans, La.

Representing

**ACME** Road Graders, Rollers  
**BROWNING** Cranes, Shovels  
**AUSTIN** Trenching Machines  
**BOX** Cranes and Hoists  
**CUMMINS**—Diesel Engines  
**CLIMAX** Engines  
**DEAN BROS.** Pumps  
**ERIE** Aggregators, Bins  
**HYDROL**—Oil Purifiers  
**GENERAL ELECTRIC** Arc  
Welders, Motors  
**INGERSOLL-RAND** Air  
Compressors, Tools  
**KOPPEL** Industrial Cars  
**MUNDY**—Hoists  
**MERRELL** Pipe Machines  
**MORRIS** Dredges, Pumps  
**NOVO** Engines, Hoists, Pumps  
**NAGLE** Boilers and Engines  
**PACIFIC** Deep Well Pumps  
**PLYMOUTH** Locomotives  
**STEPHENS-ADAMSON**  
Conveyors, Etc.  
**SILENT** Hoists and Cranes  
**SWABY** Centrifugal Pumps  
**WEBER** Insulating Cement  
**WEIR-KILBY** Frog, Switches,  
Welded Tanks, Pipe, Etc.

## DUKEHART MACHINERY COMPANY

106-8-10 W. Second St., Des Moines, Ia.

Representing

**ALLIS-CHALMERS** Track Type Tractors  
**ALLIS-CHALMERS** Industrial Tractors  
**ALLIS-CHALMERS** Elevating Graders  
**ALLIS-CHALMERS** Power Controlled Blade  
Graders  
**ALLIS-CHALMERS** Cat. Wagons  
**ALLIS-CHALMERS** Motor Patrols  
**WILLIAMS** Buckets and Trailers  
**CENTURY & SHAWNEE** Pull Type Maintainers  
**NORTHWEST** Shovels, Cranes and Draglines  
**MICHIGAN** Shovels and Draglines  
**WABCO** Scoops  
**M W** Lubricant  
**SNOW PLOWS, ROTARY SCRAPERS AND  
PENSSES**

## Joe C. Tucker

Morganfield Kentucky

Representing

J. D. Adams Co.  
Cleveland Tractor Co.  
Western Wheeler Scraper Co.  
Harnischfeger Corporation  
Lakewood Engineering Co.  
A. B. Farquhar, Ltd.  
Chain Belt Co.  
Link-Belt Co.  
Sullivan Machy. Co.  
Bellanca Crushers  
Butler Bin Co.  
Huber Mfg. Co.  
Euclid Rd. Machy. Co.  
Hughes-Keenan Co.

## Louisiana Road Machinery Co., Inc.

1111 Julia Street New Orleans, La.

Representing

**GALION IRON WKS. & MFG. CO.**—Graders,  
Rollers, Motor Patrols, etc.  
**CLEVELAND TRACTOR CO.**—Tractors  
**ELGIN CORP.**—Street Sweepers & Eductors  
**FOOTE**—Paving Mixers  
**EAGLE TRUCK BODY & MFG. CORP.**—  
Dump Wagons  
**UNIVERSAL CRUSHER CO.**—Rock Crushers  
**STROUD ROAD MACHINERY CO.**—Elevating  
Graders

## WILSON MACHY. & SUPPLY CO., Inc.

Contractors' Equipment & Supplies

139-51 North Mill St. Lexington, Ky.

Distributors for

**Allis-Chalmers** Mfg. Co.  
**Ingersoll-Rand** Co.  
**Austin-Western** Road Machinery Co.  
**Domestic** Engine & Pump Co.  
**Lakewood** Engineering Co.  
**Take** Shovel Co.  
**Novo** Engine Co.  
**Construction** Machinery Co.  
**American** Steel & Wire Co.  
**Austin** Machinery Corp.  
**Butler** Bin Co.  
**Foot** Company, Inc.  
**Atlas** Powder Co.  
"The Contractors' Supply House in Central Ky."

## HENRY A. PETTER SUPPLY CO.

Paducah Kentucky

**Alm** Equipment  
**American** Wire Rope, Mesh  
**Bates** Bar Ties  
**Black & Decker** Tools  
**Cedar Rapids** Crushers  
**Chain Belt (Rex)** Mixers  
**D-A** Lubricants  
**DuPont** Explosives  
**Dobbie** Derricks  
**Elastic** Expansion Joint  
**Farquhar** Engines, Boilers  
**Gulf States** Reinforcing Steel  
**Hanson** Excavators  
**Hauk** Heaters and Thawers  
**Johnson** Bins and Hoppers  
**Lidgerwood** Hoisting Machy.  
**Link-Belt** Portable Conveyors  
**Beebe** Hand Hoists  
**LeRoy** Gas Engines  
**Northwest** Shovels, Cranes  
**Novo** Pumps and Hoists  
**Oswald** Apparatus  
**Pager** Buckets  
**Rogers Bros.** Trailers  
**Saugen** Derricks  
**Shunk** Grader Blades  
**Toledo** Torches  
**Trackson** Tractors  
**Universal** Cone. Accessories  
**Vulcan** File Equipment  
**Wehr** Graders  
**Western** Road Machinery  
**Westinghouse** Elec. Motors  
**Worthington** Pumps  
**Wyoming** Shovels

## SOUTHERN STATES EQUIP. CO., Inc.

1510-1530 Tchauptoulas St. NEW ORLEANS

Representing

**P & H**—Shovels, Cranes and Draglines  
**BLAW-KNOX**—Bins, Batchers, Road Forms Buckets  
**ORD**—Concrete Finishing Machines  
**FOOTE**—Paving Mixers  
**JAEGER**—Concrete Mixers  
**TELSMITH**—Sand and Gravel Plants  
**DOMESTIC**—Pumps, Engines  
**ORR & SEMBOWER**—Hoisting Engines  
**LAKEWOOD**—Concrete Chuting  
**UNION**—Pile Hammers  
**THOR**—Compressors and Air Tools  
**KOPPEL**—Industrial Cars and Trucks  
**STANDARD**—Heating Kettles  
**CONTINENTAL**—Gas Engines  
**CHICAGO**—Automatic Material Conveyors  
**CLEVELAND**—Subgrader Scrapers, Form Scrapers  
**IOWA**—Pre-Mix Plants, Crushers

### Builders Supply Company, Inc.

P. O. Box 295 Shreveport, La.

#### Representing

REX—Pavers, Mixers, Pumps  
Saw Rigs and Elevators  
NORTHWEST—Cranes,  
Draglines, Shovels and  
Dragline Buckets  
HELTZEL—Steel Forms,  
Bins and Batches  
TOLEDO—Trenches  
MORITZ—Shoulder Ma-  
chines  
BUFFALO—Rollers  
OWEN—Clamshell Buckets  
MUNDY—Hoisting Engines

WILLIAMSPORT—Wire  
Rope  
GENERAL—Wheelbarrows,  
Concrete Carts & Grader  
Blades  
KALMAN—Center Strip  
NATIONAL—Steel Fabric  
LITTLEFORD—Asphalt  
Kettles  
HUG—Turntables and Sub-  
graders  
SIMPLEX—Jacks  
LeROI—Engines

### D. C. ELPHINSTONE, INC.

115 S. Calvert St. Baltimore, Md.

#### Representing

Koehring Co.  
T. L. Smith Co.  
Kwik-Mix Co.  
Insley Mfg. Co.  
Parsons Co.  
C. H. & E. Mfg. Co.  
Geo. Haiss Mfg. Co.  
Sawman Bros., Inc.  
J. D. Adams Co.  
C. S. Johnson Co.  
Gardner-Danver Co.

Owen Bucket Co.  
LaBour Co., Inc.  
Emerson Pump & Valve Co.  
Iowa Mfg. Co.  
H. K. Porter Co.  
Reed Prentice Corp.  
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Goodall Rubber Co.  
Minwax Co.

Member: Associated Equipment Distributors

### THE EQUIPMENT CO.

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#### Representing

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INGERSOLL-RAND Compressors and  
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CONTINENTAL "Red Seal" Gas En-  
gines  
LIDGERWOOD Hoists

### C. M. CONANT COMPANY

Bangor and Portland Maine

#### Representing

"CATERPILLAR" Tractors and  
Graders  
SPEEDER Shovels and Draglines  
SARGENT Snow Plows  
DAVEY Compressors  
LaPLANT-CHOATE Bulldozers

### JOHN C. LOUIS COMPANY

Incorporated  
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#### Representing

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The Lakewood Engineering Co.  
American Cable Company  
Browning Crane and Shovel Co.  
Butler Bin Company  
Wheeling Corrugating Company  
Good Roads Machinery Company  
Littleford Brothers  
The Foote Company  
Hutchins Steel Products Company  
Jones Superior Machine Co.  
The Burch Corporation  
Wapnet Gear Works  
Worthington Pump & Machy. Co.

Member: Associated Equipment Distributors

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Portland, Maine New Haven, Conn. Worcester, Mass.

#### Representing

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Austin Machinery Corp.  
Brookville Locomotive Co.  
Jones Superior Mach. Co.  
Red Star Corp.  
Easton Car & Construction Co.  
Hercules Motors Corp.  
Homelite Corporation  
Ingersoll-Rand Co.  
Jaeger Machine Co.  
Lakewood Engineering Co.  
Dobbie Fdy. & Mach. Co.  
Lawrence Pump & Engine Co.

LeROI Company  
A. Lechen & Sons Rope Co.  
Littleford Bros.  
McKiernan-Terry Corp.  
Lambert-Nat'l Hoisting Div.  
Mead-Morrison Mfg. Co.  
Consolidated Concrete Ma-  
chinery Corp.  
Sagen Derrick Co.  
The Ohio Power Shovel Co.  
Telado Pressed Steel Co.  
Wehr Co.  
Wood Shovel & Tool Co.

Member: Associated Equipment Distributors

### NORTHERN ROAD EQUIPMENT CO.

82 St. John Street Portland, Maine

#### Representing

ALLIS-CHALMERS MFG. CO.—Tractors  
BAY CITY SHOVELS, INC.—Shovels, Cranes  
IOWA MANUFACTURING CO.—Crushers, Gravel Plants  
DOMESTIC ENGINE & PUMP CO.—Pumps  
FOUR WHEEL DRIVE AUTO CO.—"FWD" Trucks  
INTERNATIONAL HARVESTER CO.—Industrial Tractors  
N. P. NELSON IRON WORKS—Loaders  
SCHRAMM, INC.—Air Compressors and Tools  
TRACKSON CO.—Hoists, Loaders  
WEHR CO.—Power Road Graders

### THE HENRY H. MEYER CO.

658 Munsey Bldg. Washington, D. C.  
110 S. Howard St., Baltimore, Md.

#### Representing

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Blaw-Knox Co.  
Boston & Lookport Block Co.  
Brookville Locomotive Co.  
Byers Machine Co.  
Chausse Oil Burner Co.  
Conroy & Co., Inc.  
Domestic Engine & Pump Co.  
E. I. Du Pont de Nemours & Co.  
Dobbie Fdy. & Machine Co.  
Duff Mfg. Co.

A. B. Farquhar Co., Ltd.  
Harrison Co.  
Pulsmore Steam Pump Co.  
Ransome Concrete Mach. Co.  
Richmond Screw Anchor Co.  
Sterling Wheelbarrow Co.  
Templeton-Kerby Co., Ltd.  
Telado Pressed Steel Co.  
Union Iron Works  
Universal Road Machy. Co.

### P. I. PERKINS CO.

376 Dorchester Ave. Boston, Mass.

#### Representing

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tors  
"Caterpillar" Road  
Machinery  
Butler Bins & Batches  
LaPlant-Choate Bull-  
dozers  
Bex Pumps

Pierce Rollers  
Byers Cranes & Shov-  
els  
Warren Bros. Cement  
Plants  
Bex Mixers, Pavers  
Mundy Hoists  
Owen Buckets  
Schramm Air Compre-  
ssors

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725-27 East 25th St. Baltimore, Md.

#### Representing

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"CATERPILLAR" ROAD MACHINERY  
"CATERPILLAR" COMBINE HARVESTERS  
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KILLEFER TILLAGE TOOLS  
LINK-BELT SHOVELS & CRANES  
EUCLID ROAD MACHINERY CO.  
CLEVELAND ROCK DRILL CO.  
BARNES MFG. COMPANY  
LA PLANT-CHOATE MFG. CO.  
WILLAMETTE-ERSTED CO.  
BAKER MANUFACTURING CO.  
ROTARY SNOW PLOW CO.  
ATHEY TRUSS WHEEL CO.  
REX-WATSON CORPORATION  
"JAY BEE" FEED MILLS  
DAVEY AIR COMPRESSOR CO.  
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### THE BOND CO.

Harold L. Bond, Pres.

DORCHESTER AVE. & SOUTH BOSTON  
OLD COLONY AVE. MASSACHUSETTS

#### Contractors' Tools and Equipment

#### Representing

SMITH—Mixers and Pavers  
KOEHRING—Cranes, Shov-  
els and Mixers  
PARSONS—Trench Ma-  
chines and Backfillers  
INSLEY—Excavators and  
Concrete Placing Equip.  
CHICAGO—Auto. Conveyors  
ROGERS—Trailers

HAUCK—Kerosene Heaters  
CONNERY & CO.—Asphalt  
Kettles  
SARGEN—Derricks  
JOHNSON Bins and Batches  
NOVO—Gasoline Engines,  
Pumps and Hoists  
INGERSOLL-RAND—Air  
Compressors

Member: Associated Equipment Distributors

### M. B. TYLER COMPANY

344 Columbus Ave. Springfield, Mass.

#### Representing

"CATERPILLAR" Tractors, Road Machinery  
and Combines (Conn. & Western Mass. Terr.)  
KILLEFER Tractor Implements  
LA PLANT-CHOATE Snow Plows, Bulldozers  
WILLAMETTE-ERSTED Hoists for "Cater-  
pillars"  
W-K-M Hoists and Rock Crusher for Tractors  
DAVEY—Air Cooled Air Compressors  
FARQUHAR Boilers and Engines  
PIONEER Gravel Equipment, Screens, etc.  
DETROIT HARVESTER Mowers and Saw  
Brushes  
EUCLID Scrapers and Wagons  
HERCULES Gasoline Rollers  
DAY Crushers  
WAUSAU Snow Plows

### THOS. M. BROWN, INC.

106 So. Gay St. Baltimore, Md.

#### Representing

KEYSTONE Shovels and Well Drills  
KNICKERBOCKER Concrete, Plaster and Mor-  
tar Mixers  
LE ROI—Mix Air Compressors  
NOVO Hoists  
ERIE—Clamshell & Dragline Buckets, Aggre-  
gators  
M & M Form Clamps and Shores  
TOLEDO Trenches  
WOOD Shovels  
MARLOW Pumps  
NORTHERN Conveyors

### CLARK-WILCOX COMPANY

790-798 Albany St. Boston, Mass.

#### Representing

RANSOME—Concrete Mixers, Chuting Equip.  
NORTHWEST—Cranes, Shovels, Draglines  
TRUCKTOR—Crawler Trucks  
BLAW-KNOX—Steel Forms, Bins, Buckets  
ORD—Concrete Road Finishers  
FLANNERY MFG. CO.—Detachable Bits  
CARTER—"Hunding" Pumps  
INGERSOLL-RAND—Air Compressors  
ORR-SEMBOWER—Hoists, Boilers, Mixers  
ROOS—Shores and Clamps  
HAUCK—Oil Burners and Heaters  
HAISS—Elevators, Conveyors and Loaders  
ALLIS-CHALMERS—Tractors  
BAKER—Bulldozers  
SARGENT—Plows  
BEEBE BROS.—Hoists

### CYRIL J. BURKE

Great Lakes Terminal Warehouse  
DETROIT MICHIGAN

#### Representing

Lakewood Engineering Co.  
Jaeger Machine Co.  
Dobbie Foundry & Machine Co.  
Hercules Motors Corp.  
Erie Steel Construction Co.  
Easton Car & Construction Co.  
J. D. Farasey Mfg. Co.  
J. S. Mundy Hoisting Engine Co.  
J. M. Willard Co.  
Upson-Walton Co.  
A. S. Marlow Co.  
Whitcomb Locomotive Co.



**Keller Tractor & Equipment Co., Inc.**  
5163-69 Martin Avenue  
Detroit Michigan

*Distributors of*

"CATERPILLAR" Tractors, Graders, Combines  
KILLEFER Road and Farm Tools  
LA PLANT-CHOATE Bulldozers, Backfillers, Wagons, Snow  
plows  
ATECO Hydraulic Scrapers  
BAKER MANEY Road Scrapers, Snowplows  
WILLAMETTE Hoist for "Caterpillars"  
AMERICAN HOIST and DERRICK CO., Gas Shovels,  
Cranes and Draglines  
DETROIT HARVESTER Sweepers and Brushes  
GARDNER-DENVER COMPANY  
DOMESTIC ENGINE & PUMP CO.

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*Representing*

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Barnes—Pumps  
General—Wheelbarrows, Concrete Carts  
Ingersoll-Rand—Compressors, Air Tools  
Knickerbocker—Concrete Mixers, Saw Rigs  
Laskawana—Steel Sheet Piling  
Lambert-National—Hoisting Engines and Winches  
Saugen—Derricks and Winches  
Union—Pile Hammers, Mixers, Air Locks  
American Steel & Wire—Wire Rope  
Wood—Shovels, Picks and Mauls  
Dravo—Bottom Dump Buckets  
TriLok—Steel Grating  
American Marsh—Redi-Prime Pumps  
Homestead Valve—High Pressure Jenny

**E. K. S. EQUIPMENT CO.**  
18 Grandville Ave., S.W., Grand Rapids, Mich.

*Representing*

ALLIS-CHALMERS—Trac-  
tors, Graders  
BAKER—Snow Plows, Road  
Equipment  
BERG—Concrete Finishers  
CLEVELAND—Air Tools  
DIAMOND—Crushers,  
Gravel Plants  
FLEXIBLE—Road Joint Ma-  
chinery  
FOUR WHEEL DRIVE—  
Trucks  
HELTZEL—Forms, Bins,  
Batches  
HUBER—Rollers  
INSLEY—Towers, 1/2-yd.  
Shovels

KOEHRING—Shovels,  
Cranes, Draglines, Pavers,  
Mixers  
KWIK-MIX—Mixers  
LITTLEFORD—Kettles,  
Heaters, Asphalt Machinery  
MACWHYTE—Wire Rope  
MILWAUKEE—Locomotives  
NEISS—Rotary Snow Plows  
NOVO—Engines, Pumps,  
Hoists  
NORTHERN—Conveyors  
PARSON—Trenchers, Back  
fillers  
ROSCO—Oil Distributors  
SCHRAMM—Air Compres-  
sors  
T.L. SMITH—Pavers, Mixers

**HUNTER MACHINERY COMPANY**  
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ARCHER Towers  
BATES Wire Ties  
CHAIN BELT Mixers, Pavers,  
Pumps, Saw Rigs, Elevators  
CLYDE Hoists, Derricks  
HOMELITE Pumps  
LESCHEN Wire Rope  
McKIERNAN-TERRY Ham-  
mers  
NORTHWEST Shovels,  
Cranes, etc.  
BEEBE BROS. Equipment

MUNICIPAL EQUIPMENT  
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SASGEN Derricks, Winches  
SAUERMAN Draglines, etc.  
SULLIVAN Compressors,  
Tools  
TRACKSON Wagons, etc.  
CLEAVER-BROOKS CO.—  
Heaters  
CENTAUR—Mowers  
WEHR—Graders

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*Representing*

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Combines  
LaPLANT - CHOATE—Bulldozers, Trailers,  
Backfillers, Wagons  
KILLEFER—Road Rippers  
EUCLID—Automatic Scrapers, Wagons  
PIONEER—Gravel Screening, Crushing and  
Washing Equipment  
WAUSAU—Snow Plows, Tractor Equipment  
AMERICAN HOIST & DERRICK CO.—Gas  
Shovels, Cranes and Draglines

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Liberty Street and Park Place  
JACKSON MICHIGAN

*Representing*

KNICKERBOCKER—Concrete Mixers, Saw  
Rigs, Mortar and Plaster Mixers  
NOVO—Gas Engines, Gas and Electric Hoists,  
Pumps and Dragline Equipment  
CHAUSSE—Portable Asphalt Plants, Tar Ket-  
tles, Tool Heaters, Mixer Heaters, Torches,  
Pre-Mix Plants  
CHICAGO PNEUMATIC TOOL CO.—Compres-  
sors, Tool, etc.  
LIBBEY CATAPHOTE CORP.—Reflecting Road  
Signs  
"QUIKWAY"—Traffic-Line Painting Machine

**Upper Peninsula Tractor Co.**  
L'Anse Michigan

*Representing*

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"CATERPILLAR" Graders  
"CATERPILLAR" Harvesters  
ATHEY Truss Wagons  
ROTARY Snow Plows  
WAUSAU Snow Plows  
KILLEFER Road Machinery  
PIONEER Gravel Equipment  
EUCLID Earth Moving Equipment

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Clamshell Buckets  
Clyde Hoists, Derricks  
Domestic Pumps  
Euclid Crawler Dump  
Wagons & Automa-  
tic Scrapers  
Hains Loaders  
Highway Sanders  
Koppel Industrial Cars  
McKiernan-Terry Pile  
Hammers  
Allis-Chalmers Tractors  
Northern Conveyors

Northwest Shovels and  
Cranes  
Nye Steam Pumps  
Ord Road Finishers  
Ransome Pavers and  
Towers  
"Snow King" Plows  
Whitcomb Locomotives  
Sullivan Air Compres-  
sors  
Allis-Chalmers Graders,  
Motor Patrols and  
Dump Wagons  
M-W Lubricants  
Toro Mowers  
Municipal Road Oilers  
"Westeco" Highway  
Signs

Member: Associated Equipment Distributors

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*Representing*

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Tractors & Road Machinery  
Road Tools & Farm Implements  
Tractor Hoists  
Wagons, Bulldozers, Backfillers,  
Snow Plows  
Snow Plows  
Bulldozers, Scarifiers  
Concrete Mixers  
Air Compressors  
Four-Wheel Drive Trucks  
Gravel Crushing, Screening,  
Washing Plants  
Shovels  
Ateco Dirt-moving Equipment  
Air Tools

Thew Shovel Co.  
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Cleveland Rock Drill Co.

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2329 University Ave., S. E., Minneapolis, Minn.

*Representing*

CATERPILLAR TRACTOR CO.—Tractors and Road Ma-  
chinery  
KILLEFER MFG. CO.—Road Rippers, Scrapers, Farm Im-  
plements  
HIGHWAY TRAILER CO.—Digging Machines, Scrapers  
and Winches  
LA PLANT-CHOATE MFG. CO.—Bulldozers, Snow Plows,  
Dump Wagons, Backfillers  
FRED GETTELMAN CO.—Truck Snow Plows  
HI-WAY SERVICE CORP.—Bulldozers, Scarifiers  
WAUSAU IRON WORKS—Wausau Snow Plows  
LENHART WAGON CO.—Tractor Dump Wagons  
BAKER MFG. CO.—Scrapers  
MATSON WIRE & MFG. CO.—Snow Fence  
DAVEY—Air Compressors, Caterpillar Mounted  
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ATHEY TRUSS WHEEL CO.—Crawlers, Dump Wagons  
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514-520 Second St. S. E. Minneapolis, Minn.

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CHAUSSE—Asphalt Plants,  
Oil Heaters  
DAVENPORT—"Cat Tread"  
Wagons  
DIAMOND—Gravel Plant  
Equipment  
FISCHER & HAYES—Con-  
crete Form Devices  
HUG—Roadbuilder Trucks  
HUMPHRIES—Power Pumps  
JONES—Superior Saw Rigs  
J A G E R—Mixers, Hoists,  
Pumps, Truckmixers  
KARDONG—Column Clamps  
KIESLER—Clam Shell Buck-  
ets

LAKEWOOD—Tower Equip.  
LE TOURNEAU—Grading  
Equipment  
MORITZ—Shouldering Ma-  
chines  
MULTIFOOTE—Pavers  
MUNDY—Hoisting Engines  
NATIONAL—Form Clamps  
NELSON—Spreader Ties  
OSGOOD—Shovels, Cranes  
RED STAR—Carts, Wheel-  
barrows  
SARGANT—Cranes, Drag-  
lines, Dragline Buckets  
WORTHINGTON—Air  
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Cranes, Gas Shovels— $\frac{1}{2}$ ,  $\frac{3}{8}$ ,  $\frac{1}{4}$ ,  $1\frac{1}{4}$  yds.  
capacity

*Exclusive Representative*

THE BROWNING CRANE & SHOVEL CO.  
HOISTING MACHINERY CO.

"Rebuilt Guaranteed Cranes—All Types"

Telephone Cortlandt 7-1992

**EUGENE F. VAN NAME**

116 John Street Horseheads, N. Y.

*Representing*

ALLIS-CHALMERS—Tractors  
ALLIS-CHALMERS—Graders  
A-W—Traffic Tread  
BAKER—Road Drags, Snow Plows  
C. M. C.—Wonder & Marsh-Capron Mixers  
HUBER—Rollers  
HOTCHKISS—Sidewalk Forms  
HANSON—Excavators  
INGERSOLL-RAND—Air Compressors  
JACKSON—Wheelbarrows  
MILES—Concrete Block Machines  
WARCO—Power Graders  
WILLIAMSPORT—Wire Rope  
WISCONSIN SPECIAL—Snow Plows

**BROWN & SITES COMPANY**

Specialists in Contractors' Equipment

Main Office: 30 Church Street  
NEW YORK CITY*Exclusive Representative*

Lakewood Engineering Co.  
Mundy Hoisting Engine Co.  
Dobbie Fdy. & Machine Co.  
Lawrence Machine & Pump Co.  
Midwest Locomotive Works

**THE HUBBARD-FLOYD CO., INC.**

167th St. &amp; Sedgwick Ave. New York City

*Representing*

NORTHWEST ENGINEERING CO.  
CATERPILLAR TRACTOR CO.  
LA PLANT-CHOATE MFG. CO.  
ATHEY TRUSS WHEEL CO.  
ROGERS BROTHERS CORP.  
O. S. JOHNSON CO.  
KNICKERBOCKER CO.  
CONSTRUCTION MACHINERY CO.  
BARNES MFG. CO.  
INGERSOLL-RAND CO.  
LAKEWOOD ENGINEERING CO.  
FOOTE COMPANY, INC.

Member: Associated Equipment Distributors

**JOHN R. TINKLEPAUGH  
LIVINGSTON NEW YORK***Also*

924 Central Avenue, Albany, N. Y.

*Distributors*

CLETRAC Tractors, New and Rebuilt  
DAVEY Air Compressors  
EUCLID Wheel Scrapers and Fresno  
SARGENT Snow Plows  
YORK Reclaimers  
GALION Road Graders  
JOHN DEERE Plows  
ESSEX Hydraulic Backfillers

**Contractors Trading Company**

Contractors' Equipment and Supplies

232 Fulton Street New York

*Representing*

Ingersoll-Rand Co.  
Domestic Engine & Pump Co.  
Contractors' Safety Hooks  
Weldless Pile Bands

"A Complete Service for the Contractor"

**H. J. HUSH, INC.**

Contracting Equipment

509-515 W. 56th St. New York, N. Y.

*Representing*

DOMESTIC ENGINE AND PUMP CO.  
Muncie Oil Engine Co.  
F. E. Myers & Bros. Co.  
PUMPS — ENGINES — AND HOISTS

# MAHONEY-CLARKE, INC.

*Complete Line of Contractors' Equipment and Supplies*

217 Pearl St. New York, N. Y.

*Representing*

BEAUMONT Material Bins  
DAYTON Concrete Buckets  
JAEGER Road Pumps  
JAEGER Truck Mixers  
LAKEWOOD Road Equipment  
MARLOW Pumps  
VULCAN Hammers, Extractors and Parts  
THURSTON Detachable Bits  
PUEOX Welding and Cutting Outfits

# UNITED HOISTING COMPANY, INC.

165 Locust Avenue  
NEW YORK, N. Y.

*Representing*

Sullivan Machinery Co.  
Construction Machinery Co.  
G. M. T. Company  
Barnes Mfg. Co.

# KEYSTONE BUILDERS SUPPLY CO.

85 Palm Street Rochester, N. Y.

*Representing*

JAEGER—Mixers, Hoists & Towers  
TRIPLEX—Road & Self-Priming Centrifugal Pumps  
LAKEWOOD—Finishing Machines, Batch Boxes, etc.  
SCHRAMM—Air Compressors  
CLEVELAND—Air Tools  
BEEBE—Hoists  
DIAMOND—Crushing & Screening Equipment  
WILLIAMSPORT—Wire Rope  
SASGEN—Derricks  
HELTEL—Bins, Forms & Batchers  
NELSON—Spreader Ties  
BOSCO—Clamps  
BALDWIN—Shovels, Scoops  
RED STAB—Adjustable Jack Shores, Mortar Boxes, Chutes, Wheelbarrows & Buggies

# H. O. PENN MACHY, CO., INC.

140th St. & East River Bronx, N. Y.

*Representing*

BYERS MACHINE CO.—WARCO—Graders  
Convertible Cranes and ARCHER IRON WORKS—  
Shovels Mast Hoists, Towers  
CHAIN BELT CO.—"REX" REX—Diaphragm, Plunger  
Mixers, Pavers, Mortar and and Centrifugal Pumps  
Plaster Mixers, Saw Rigs HOTCHKISS STEEL PRO-  
BUHL Air Compressors DUCTS CO.—Sidewalk and  
McCORMICK-DEERING—Road Forms  
Tractors and Accessories BUTLER BIN CO.—Bins and  
AMES Gasoline Rollers Measuring Devices  
TRACKSON Crawlers, Shovels and Bulldozers  
OHIO Tractor Dump Wagons  
Warehouse Stock—Service Station  
Member: Associated Equipment Distributors

# C. V. PIERCE CO., Inc.

Phone: 64

Bedford Road Pleasantville, N. Y.

178 So. Robinson Ave. Newburgh, N. Y.

*Representing*

CLETRAC Crawler Tractors  
Road Graders  
OLIVER Plows  
Backfillers and Concrete Mixers  
EUCLID Automatic Scrapers  
Snow Plows  
WORTHINGTON Compressors  
LOCKE Power Lawn Mowers

# DRAKE TRACTOR & EQUIPMENT COMPANY

116 So. Washington St. Rome, N. Y.

*Representing*

COLEMAN Four-Wheel-Drive Trucks  
MEAD-MORRISON Power Shovels  
UNIVERSAL Power Shovels  
DAVEY Air Cooled Air Compressors  
ORR & SEMBOWER Hoists  
ROME Drawn and Power Graders  
Miscellaneous Road Building Equipment

# RICHARDS & HIRSCHFELD, Inc.

50 Church Street New York, N. Y.

**FOREIGN DEPARTMENT**

(Export Trade)

AMERICAN SAW MILL MACHY, CO.—Port-  
able Saw Mills, Saw Benches, Woodworkers  
ORR & SEMBOWER, INC.—Concrete Mixers,  
Hoists, Steam Boilers  
SMITH ENGINEERING WORKS—"Telamith"  
Rock Crushers, Screens and Conveyors  
AMERICAN SAW WORKS—Circular Saws  
CHRISTIANA MACHINE WORKS—Water  
Wheels, Gears  
Agents Throughout the World

# POUGHKEEPSIE FARM SERVICE, Inc.

Cottage St. at Bement Ave., Poughkeepsie, N. Y.

*Representing*

"CATERPILLAR" Tractors, Graders and  
Harvesters  
LA PLANT-CHOATE Bulldozers, Backfillers  
EUCLID Wagons and Scrapers  
ATHEY Truss Wheel Wagons  
WILLAMETTE-ERSTED Hoists  
HIGHWAY TRAILER—Boring Machines and  
Scrapers  
ATECO—Hydraulic Dirt Movers  
KILLEFER Tractor Implements

# THE KELLAM & SHAFFER CO.

Maxon Road Schenectady, N. Y.

*Representing*

F. W. D.—4-Wheel Drive Auto  
Trucks  
SKELTON—Hand Shovels  
Contractors Small Tools and  
Equipment

# JOHN REINER & CO., Inc.

290 Hudson St. New York, N. Y.

*Representing*

NOVO ENGINE CO.—Gasoline En-  
gines  
WISCONSIN MOTOR CO.—Gasoline  
Engines  
POWER MFG. CO.—Diesel Engines  
PERFEX CORPORATION—Radi-  
ators

Telephone Walker 5-1795

# BASHFORD-McCORD CORP.

95 Crouch St. Rochester, N. Y.

*Representing*

Caterpillar Tractor Co.  
"Caterpillar" Road Machinery  
"Caterpillar" Combined Harvesters  
Hi-Way Service Corporation  
Killefer Manufacturing Co.  
LaPlant-Choate Mfg. Co.  
Willamette Iron & Steel Works  
Athey Truss Wheel Co.  
Gardner-Denver Co.  
Euclid Road Machinery Co.  
Blaw-Knox Ateco Equipment

# BREWSTER & WILLIAMS, INC.

Contractors' Supplies and Equipment

306 S. Salina St. Syracuse, N. Y.

*Representing*

BUTLER Bins and Measuring Hoppers  
C. H. & E. Contractors' Pumps, Hoists, Saw Rigs and Mortar  
Mixers  
HAISS Loaders, Excavators, Conveyors and Buckets  
HOTCHKISS Steel Forms  
LA CROSSE Tu-Way Trailers  
LITTLEFORD Asphalt Heaters and Tools  
RANSOME Mixers, Pavers, Towers and Chutes  
SULLIVAN Compressors, Drills, and Hoists  
THEW Shovels and Cranes

# STUMPP & LEHTI

*Contractors' Equipment*

427 Manida Street Bronx, N. Y.

*Representing*

SPEEDER MACHINERY CORP.  
Shovels — Cranes — Draglines  
PIONEER  
Sand and Gravel Plants  
HERCULES  
Power Units  
Derricks - Hoists - Cableways  
Clamshell & Dragline Buckets  
Platform Trailers

# HAVERSTICK & COMPANY, INC.

Ford and Spring Sts., Rochester, N. Y.

*Representing*

ORR & SEMBOWER—Mixers, Hoists and Boilers  
LANSING CO.—Barrows, Scrapers, Mixers  
INGERSOLL-RAND CO.—Portable Air Compressors  
AMERICAN STEEL & WIRE CO.—Wire Rope  
DOMESTIC ENGINE & PUMP CO.—Pump Rigs  
DUFF MFG. CO.—Hydraulic & Screw Jacks  
GOODYEAR—Mechanical Rubber Goods  
GOULDS PUMPS, INC.  
CONNEAUT SHOVEL CO.  
MULCONROY CO.—Hose for every purpose  
TOLEDO Torches and Hoses  
AEROL Heaters and Burners

# BUELL EQUIPMENT CORP.

736 S. Beech St. Syracuse, N. Y.

*Representing*

AUSTIN MACHINERY CORP. — Trenchers,  
Backfillers  
BROWNING CRANE & SHOVEL CO.—Cranes  
Shovels  
FAIRFIELD ENGINEERING CO. — Portable  
Conveyors  
INDEPENDENT PNEUMATIC TOOL CO.—  
Compressors, Tools  
LEACH CO.—Concrete Mixers  
MACWHYTE CO.—Wire Rope  
NOVO ENGINE CO.—Engines, Hoists, Pumps  
OWEN BUCKET CO.—Clamshell Buckets  
Telephone 2-0043

### MILLER EQUIPMENT CO., Inc.

127 Solar Street  
SYRACUSE NEW YORK

#### Representing

**BYERS**  
**CLEVELAND** (Rock Drills)  
**DOMESTIC**  
**ERIE** (Bins)  
**MEAD-MORRISON**  
**SCHRAMM**  
"A Complete Service"

### RALEIGH TRACTOR & EQUIPMENT COMPANY

108 W. Lane St. Raleigh, N. C.

#### Representing

"Caterpillar" Tractors  
Thew Shovel Co.  
LaPlant-Choate Mfg. Co.  
Euclid Road Machinery Co.  
Athey Truss Wheel Co.  
Towers & Sullivan Mfg. Co.  
Hetzl Steel Form & Iron Wks.  
Lakewood Engineering Co.  
The C. S. Johnson Co.  
The Hanson Clutch & Machy. Co.  
(Hanson Excavators)

### THE MECHANICAL SUPPLIES CO.

205-207 Vine St. Cincinnati, Ohio

#### Representing

LAKEWOOD—Screens, Subgraders, Graderooters, Road Forms, etc.  
NOVO—Gasoline Engines, Hoists, Pumps, etc.  
WORTHINGTON—Air Compressors, Rock Drills, Paving Breakers, etc.  
GENERAL—Excavators and Shovels  
JAEGER—Truck Concrete Mixers  
KILLEFER—Road Rippers and Rooters, Road Discs, Scrapers, etc.  
SUPERIOR—Weighing Batchers  
NORTHERN—Conveyors, etc.  
JONES-SUPERIOR—Portable Saw Tables, etc.  
COLUMBUS—Elevators and Conveyors

### SYRACUSE SUPPLY CO.

314 W. Fayette St. Syracuse, N. Y.  
INGERSOLL RAND CO.—Compressors, Drills, Paving Breakers

NATIONAL EQUIP. CO.—Pavers, Power Shovels, Ditchers, Dumpsters, Backfillers, Mud Jacks, Mixers  
CATERPILLAR TRACTOR CO.—Tractors, Road Graders  
LA PLANT-CHOATE CO.—Hydraulic Bulldozers, Plows, Crawler Wagons

ATHEY TRUSS WHEEL CO.—Crawler Wagons  
KILLEFER CO.—Road Rippers, Scrapers  
BARNES MFG. CO.—Road and Drainage Pumps  
WILLIAMSPORT WIRE ROPE CO.—Wire Rope  
HAZARD WIRE ROPE CO.—Preformed Wire Rope  
W. R. MEADOWS, INC.—Expansion Joint  
CLYDE MFG. CO.—Hoists and Derricks  
INSLEY MFG. CO.—Power Shovels, Concrete Placing Equipment

Member: Associated Equipment Distributors

### CAROLINA TRACTOR & EQUIPMENT COMPANY

17th & Lee Streets Salisbury, N. C.

#### Representing

"Caterpillar" Tractors and Graders  
"Euclid" Self-Loading Scrapers  
"LaPlant-Choate" Bulldozers  
"Wonder" & "Marsh-Capron" Mixers and Hoists  
"Day" Crushers

### THE QUEEN CITY SUPPLY CO.

Pearl & Elm Sts. Cincinnati, Ohio

#### Representing

Beebe Bros.—All-steel Hand Hoists  
Chain Belt Co.—Mixers, Pumps and Pavers  
Ingersoll-Rand Co.—Compressors, Pneumatic Tools  
Sauerman Bros. Inc.—Cableway and Power Scraper Excavators  
Clyde Iron Works—Hoisting Engines and Derricks  
Williams—Buckets and Trailers  
American Tubular Elevator Co.—Tubular Elevators  
Wyoming Shovel Co.—"Red Edge" Shovels and Picks  
Sagen Derrick Co.—Derricks

Cincinnati's Largest Equipment House  
Member: Associated Equipment Distributors

### ENGELS TRACTOR CO. INC.

Warehouse  
334-336 N. Genesee St.,

Utica New York

#### Distributors

"P & H" Shovels and Equipment  
"ALLIS-CHALMERS" Tractors  
"F. W. D." Four Wheel Drive Trucks  
"PIONEER" Crushing-Washing Equipment  
and other leading accounts

Phones 28361, 22312

### WE WOULD LIKE TO HAVE YOU HELP US

make this Directory of Dealers the most complete and accurate of its kind. Therefore, we would greatly appreciate any suggestions or corrections that you may have to offer.

CONTRACTORS AND ENGINEERS MONTHLY

470 Fourth Ave. New York

### THE CLETRAC OHIO SALES CO.

East 193rd St. & Euclid Ave.  
Cleveland Ohio

#### Representing

The Cleveland Tractor Co.  
The Essex Engine & Mach. Corp.  
The Tractor Equipment Co.  
The Davey Compressor Co.  
The Killefer Mfg. Corp., Ltd.  
The Cleveland Rock Drill Co.

Phones: Kenmore 0300-3897

### McQuade & Bannigan, Inc.

829 Noyes St. Utica, N. Y.

#### Representing

Jaeger Machine Co.  
Homelite Corp.  
Ingersoll-Rand Co.  
Cleveland Wheelbarrow Co.

### THE WM. T. JOHNSTON CO.

"Only Complete Equipment House in Cincinnati"

210-212-214 Vine St. Cincinnati, O.

Austin Machinery Corp.  
Archer Iron Works  
Baumont Mfg. Co.  
Binks Mfg. Co.  
DeWalt Product Co.  
Fischer & Hayes Rope and Steel Co.  
Homelite Corp.  
Huber Mfg. Co.  
Humphreys Mfg. Co.  
Knickerbocker Co.  
Mall Tool Co.  
N. P. Nelson Iron Works  
Orr & Sembower, Inc.  
Omaha Drag Line Bucket  
Oswald Acetylene Co.  
Republic Iron Works  
Sterling Wheelbarrow Co.  
Sagen Derrick Co.  
Schramm, Inc.  
Western-Wheeled Scraper Co.  
Wood Shovel & Tool Co.  
Williamsport Wire Rope Co.

Member: Associated Equipment Distributors

### THE CUYAHOGA EQUIPMENT CO.

3805 Perkins Ave. Cleveland, Ohio

#### Representing

McCORMICK-DEERING Industrial Tractors  
W. A. RIDDELL Warco Power Graders  
DETROIT Street Sweeper and Snow Brush  
HUGHES-KEENAN Roustabout Cranes  
CLEVELAND Rock Drill Air Tools  
DAVEY Air Cooled Compressors  
COMPRESSOR Rental Service  
TRACSON Crawler Tractor, Hoists & Shovels  
BLAIR Hydraulic Diggers  
WARCO Semi Crawlers  
BAY CITY Shovels  
ROTARY Scrapers  
Grader Blades, Scarifiers, Road Drags, Iron Mules, General Planetainers, Lead Clad Culvert Pipe

'Phone Endicott 1800

### American Hardware & Equipment Co.

CHARLOTTE NO. CAROLINA

#### Representing

Hotchkiss Steel Products Co.  
Jaeger Machine Co.  
Novo Engine Co.  
Koppel Industrial Car & Equip. Co.  
Fruehauf Trailer Company  
Burton Explosives Inc.  
Independent Pneumatic Tool Co.

### H. P. KELLY EQUIPMENT CO.

CINCINNATI, OHIO

4110 Langland St. Kirby 2597

#### Representing

FOOTE CO.—Multi-Foot Pavers  
GALION IRON WORKS—Road Rollers and Scrapers  
HARNISCHFEGGER CORP.—F & H Shovels, Cranes, Hoes, Draglines and Trenchers  
OWEN BUCKET CO.—Chambers Buckets  
BARNES MFG. CO.—Pumps  
HELTZEL STEEL FORM CO.—Road, Curb and Gutter Forms, Bins and Batchers  
FLEXIBLE ROAD JOINT CO.—Flexplane and Cleft Plane  
BROWN HOIST CO.—Hoisting Engines  
MILWAUKEE CRANE & HOIST CO.—Hoist Cranes and Derricks  
SIGNAL SERVICE CORP.—Traffic Signs and Electrical Devices  
COLUMBUS CONVEYOR CO.—Belt and Bucket Conveyors

### WE WOULD LIKE TO HAVE YOU HELP US

make this Directory of Dealers in construction equipment the most complete and accurate of its kind. Therefore, we would greatly appreciate any suggestions or corrections that you may have to offer.

CONTRACTORS AND ENGINEERS MONTHLY

470 Fourth Ave. New York



# **THE DAY & MADDOCK CO.** *Contractors' Equipment*

8201 Almira Ave. Cleveland, O.

## *Representing*

Continental Motors Corp. Geo. Hales Mfg. Co.  
Amer.-Terry Derrick Co. Concrete Surf. Machy. Co.  
Kriegerbocker Co. Universal Crusher Co.  
Blaw-Knox Co. Sauerman Bros. Inc.  
Remuel Manufacturing Co. Barnes Mfg. Co.  
Sterling Wheelbarrow Co. Sullivan Machinery Co.  
American Hoist & Derrick Co. Wappat, Inc.  
W. Toepfer & Sons Sawhill Mfg. Co.

# **THE POPE EQUIPMENT CO.**

Kent Pope, Pres.

4111 Euclid Ave. Cleveland, Ohio

## *Transportation Engineers*

Klauer Manufacturing Co., Sno-Go  
Pope Salt Spreader and Ice Melter  
Traffic Signals, etc.  
Rebuilt Trailers of All Kinds  
Municipal Equipment  
Storage

# **SMITH & ELLIOTT, INC.**

644 North 4th St., Columbus, Ohio

## *Representing*

THE LE BLOWD-SCHACHT TRUCK CO.—Motor Trucks  
SPEEDER MACHINERY CORP.—Shovels, Cranes and Draglines  
METALWELD INCORPORATED—Air Compressors  
CLEVELAND ROCK DRILL CO.—Rock Drills, Paving Breakers and Drill Steels  
HOMELITE CORPORATION—Portable Centrifugal Pumps, Lighting Plants and Blowers

# **LOOK THIS DIRECTORY OVER CAREFULLY**

If you find any errors while checking over this directory will you please advise us at once, because it is our desire to keep it accurate and up-to-date at all times.

## **CONTRACTORS AND ENGINEERS MONTHLY**

470 Fourth Avenue New York

# **J. FRANK ROLLINGS**

"The Crane Man"

2215 West Boulevard, Cleveland, Ohio

## *Representing*

THE OHIO POWER SHOVEL CO.  
Shovels, Cranes, Drag Lines  
THE OWEN BUCKET CO.  
Clam Shell Buckets  
REX Concrete Mixers  
SCHRAMM Air Compressors  
Telephone—Evergreen 3359

# **C. L. STITH COMPANY**

305 Franklin Bldg. Columbus, Ohio

## *Representing*

FOOTE CO.—Paving Mixers  
HELTZEL STEEL FORM & IRON CO.—Forms, Bins, Batchers Plants  
HUBER MFG. CO.—Gasoline Rollers  
JAEGER MACHINE CO.—Concrete Mixers, Pumps, Hoists  
LAKEWOOD ENGINEERING CO.—Paving, Building and Industrial Equipment  
FLEXIBLE ROAD JOINT MACHINE CO.—Compressed Joint Machine  
LITTLEFORD BROS.—Tar and Asphalt Kettles  
CLEVELAND ROCK DRILL CO.—Rock Drills, Paving Breakers  
McCLOSKEY TORCH CO.—Bombshell Torches  
OWEN BUCKET CO.—Clamshell Buckets  
SASGEN DERRICK CO.—Derricks, Winches

# **Industrial Engine Parts, Inc.**

1053 E. 61st St. Cleveland, Ohio

## *Representing*

Minneapolis-Moline Power Impl. Co.  
Climax Engineering Co. Twin Disc Clutch Co.  
Fuller & Johnson Mfg. Co.  
Northern Conveyor & Mfg. Co.  
Stover Engine & Mfg. Co.  
Scintilla Magneto Co.  
Wise Electric Co. Pierce-Governor Co.  
Portable Power Tool Corp. Hercules Prod. Co.  
Le Roi Co.  
Vulcan S-H-R Valves  
Bonney "CV" Wrenches  
Hastings "Dubi-test" Rings

# **W. T. WALSH EQUIPMENT CO.**

12500 Berea Road Cleveland, Ohio

## *Representing*

BYERS MACHINE CO.—Cranes and Shovels  
BUTLER BIN CO.—Bins and Batchers  
"CATERPILLAR" Tractors  
GARDNER-DENVER CO.—Compressors and Air Tools  
"GYRO-CENTRIC" Crusher  
HUBER MFG. CO.—Road Rollers  
JAEGER-LAKEWOOD Equipment  
McKIERNAN-TERRY CORP.—Pile Hammers  
LAMBERT-NATIONAL DIV.—Hoisting Engines  
PIERCE EQUIPMENT CO.—Force "Bear" Rollers  
ROSCO MFG. CO.—Rosco Distributor, Oilers  
WELLMAN ENGINEERING CO.—Williams Buckets  
WHITE MFG. CO.—Chasme-White Asphalt Plants, Heaters  
Tel.: Lakewood 1024

# **THE TAYLOR TRACTOR CO.**

285 Cozzens St. Columbus, Ohio

## *Representing*

Caterpillar Tractor Company—Tractors, Road Machinery and Harvesters  
Harnischfeger Sales Corp.  
LaPlant-Chaste Mfg. Co.  
Novo Engine Co.  
Athey Truss Wheel Co.  
Killefer Manufacturing Corp.  
Baker Manufacturing Co.  
Euclid Road Machinery Co.  
Willamette-Brated Co.  
Blaw-Knox Co. (Ateco Div.)  
All Steel Products Mfg. Co.

# **INTERSTATE EQUIPMENT SALES CORPORATION**

Chester-Twelfth Bldg., Cleveland, O.

## *Representing*

MANITOWOC ENGINEERING WORKS—Speedcranes, Shovels, Draglines, Trenches  
MID-WEST Gas, Gas-Electric and Diesel-Electric Locomotives  
OHIO Locomotive Cranes  
JOS. F. KIESLER—Clam Shell Buckets

# **McNEILLY MACHINERY CO.**

337 South High St. Columbus, Ohio

## *Representing*

Austin Machinery Corp.—Morebranch Corp.—Wellpoint  
Trenching Machines, Backfillers, Shovels and Cranes  
Systems, Pumps  
McKiernan-Terry Corp.  
Link Belt Co. File Hammers, Lambert-National Hoisting Engines  
Electric, Gasoline Cranes, Shovels and Draglines  
Saggen Derrick Co.  
Blystone Mfg. Co. Derricks, Winches, etc.  
Concrete, Mortar and Plaster Mixers  
Barnes Mfg. Co.  
Chain Belt Co.  
Debbie Fdy. & Mach. Co. REX Mixers and Pavers  
Derricks and Fittings  
Gardner-Denver Co.  
Owen Bucket Co.—Clamshell and Digging Buckets  
Air Compressors, Tools  
Continental Rubber Works—Air Hose, Suction Hose

# **THE W. W. WILLIAMS CO.**

835 West Goodale St. Columbus, Ohio

Dayton Cincinnati

## *Representing*

The Koehring Company  
Inaley Manufacturing Co.  
T. L. Smith Co.  
Parsons Co.  
Cleveland Rock Drill Co.  
The Sterling Motor Truck Co.  
Hug Company  
A. W. French & Co.  
Blaw-Knox Co.  
S. Flory Mfg. Co.  
Iowa Mfg. Co.  
McCormick-Deering Industrial Tractors  
The Buhl Co.

# **THE W. M. PATTISON SUPPLY CO.**

777 Rockwell Ave. Cleveland, Ohio

## *Representing*

Domestic Eng. & Pump Co.—Diaphragm and Force Pumps  
Homelite Corp.—Portable Pumps, Generators and Blowers  
Jaeger Machine Co.—Concrete Mixers and Towers  
Littleford Bros.—Asphalt Heaters, Tools and Oil Burners  
Orr & Sombower, Inc.—Electric and Gasoline Hoists, Boilers  
Patent Scaffolding Co.—Scaffold Equipment  
Saggen Derrick Co.—Derricks, Winches  
Gustav Schaefer Co.—Automatic Frames  
Wall Rope Works—High-Grade Manila Rope  
Wickwire-Spencer Steel Co.—Wire Rope  
Worthington Pump & Machy. Corp.—Compressors, Pumps  
Beebe Bros.—Hand Hoists, Wrecker Cranes, Electric Rig Saws  
Member: Associated Equipment Distributors

# **The Osborne & Sexton Machy. Co.**

Construction Machinery Division

Columbus Ohio

## *Representing*

ARCHER IRON WORKS—Material Towers  
BAY CITY SHOVELS, INC.—Gas Shovels  
BEEBE BROS.—Contractors' All-Steel Hand Hoists  
CLEVELAND ROCK DRILL CO.—Pneumatic Drills, Paving Breakers, etc.  
DOMESTIC ENGINE & PUMP CO.—Pumps, Hoisting Equipment  
ECONOMY ROCK BIT CORP.—Detachable Bits  
JONES SUPERIOR CO.—Gasoline Saws  
SCHRAMM, INC.—Air Compressors  
UNION IRON WORKS—Pile Driving Equip.  
Rentals—Sales—Service

# **Ohio Valley Machinery Co.**

Marietta Ohio

## *Representing*

International Harvester Co.  
Trackson Co.  
Wehr Co.  
Hughes-Keenan Co.  
Schramm, Inc.  
Bay City Shovels, Inc.  
W. M. Blair Mfg. Co.  
Brookville Locomotive Co.  
Muskegon Iron Works  
Corley Mfg. Co.  
Detroit Harvester Co.  
Domestic Engine & Pump Co.  
Chain Belt Co.

**W. A. KUHLMAN & CO.**

Contractors' Equipment

1804-6 Dorr Street Toledo, Ohio

## Representing

Barnes Mfg. Co. Erie Steel Construction Co.  
 Bay City Shovel Inc. Sagen Derrick Co.  
 Beach Mfg. Co. Smith Engineering Works  
 Clyde Iron Works Sales Co. Sterling Wheelbarrow Co.  
 Concrete Surf. Machy. Co. Sullivan Machinery Co.  
 Lakewood Engineering Co. A. Leachen & Sons Rope Co.  
 Littleford Bros. W. F. Kiesel Co.  
 Construction Machy. Co. W. A. K. Column Clamps  
 Bates Mfg. Co.

**BUNTING TRACTOR COMPANY**  
LA GRANDE, OREGON

## Representing

Caterpillar Tractor Company  
 "Caterpillar" Tractors  
 "Caterpillar" Combines  
 "Caterpillar" Road Machinery  
 Athey Truss Wheel Company  
 LaPlant-Choate Mfg. Company  
 American Tractor Equipment Co.  
 Killefer Manufacturing Company  
 Willamette-Ersted Company  
 Williamsport Wire Rope Company

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330 E. Morrison St. Portland, Ore.

## Representing

ANTHONY CO.—Hydraulic Dump Bodies  
 SOLANO IRON WORKS—"Pacific" Revolving Tractor Scrapers, Fresno Scrapers  
 THE NEW WAY MOTOR CO.—Air-Cooled Engines  
 STOVER MFG. & ENGINE CO.—Gasoline Engines  
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**J. WALKER WILSON**

Contractors' Machinery

P. O. Box 33

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## Representing

KEYSTONE DRILLER CO.  
 E. J. McHARG & CO.  
 SULLIVAN MACHINERY CO.  
 THE BARNES MFG. CO.  
 Keystone Excavators  
 Multi-Point Road Pavers  
 Sullivan Portable Compressors and Tools  
 Barnes Pumps  
 Blaw-Knox Buckets, Forms, etc.  
 Telephone 3-5766

**BALZER MACHINERY COMPANY**

275 Pine Street Portland, Ore.

## Representing

Marion Steam Shovel Co.—Large Power Shovels  
 Ohio Locomotive Crane Co.—Locomotive Cranes  
 Gardner-Denver Co.—Air Compressors, Drills, etc.  
 Wheeling Mold & Foundry Co.—Jaw Rock Crushers  
 Byars Machine Co.—Small Power Shovels  
 Niagara Concrete Mixer Co.—Vibrating Screens  
 Superior Engine Co.—Diesel Engines  
 S. D. LeClair Co.—Dragline Buckets  
 Chicago Automatic Conveyor Co.—Conveyors, Loaders, etc.  
 J. S. Mundy Hoisting Engine Co.—Steam, Gas and Electric Hoists  
 Ohio Tractor Dump Wagons

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**CONTRACTORS AND ENGINEERS MONTHLY**

470 Fourth Ave. New York

**THE BOARDMAN CO.**

Oklahoma City Oklahoma

## Representing

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 Crawler and Wheel Type Tractors with Allied Equipment  
 ARMCO CULVERT MFRS. ASSN.  
 Armco Ingot Iron Culverts  
 KILLEFER MFG. CORP.  
 Dirt Moving Tools

**CLYDE EQUIPMENT CO.**Contractors' Equipment and Supplies  
Portland, Oregon Seattle, Wash.

Atlas Imperial Diesel Eng. Co. Sterling Wheelbarrow Co.  
 Clyde Iron Works Sullivan Machinery Co.  
 Homelite Corp. Traylor Engr. & Mfg. Co.  
 Jaeger Machine Co. McKiernan-Terry Corp.  
 Lincoln Electric Co. Klauer Mfg. Co.  
 Bucyrus-Erie Co. Foote Company, Inc.  
 Geo. Hais Mfg. Co., Inc. Allis-Chalmers Mfg. Co.  
 Sauerman Brothers Le Roi Co.  
 Lakewood Engineering Co. Iowa Mfg. Co.  
 Beebe Bros.

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 MADSEN IRON WORKS—Portable Asphalt Paving Plants  
 WORTHINGTON PUMP & MACHINERY CORP.—Worthington Compressors, Worthington-Gillman Air Tools  
 OHIO POWER SHOVEL CO.—LIMA 1 & 1 1/4 yd. Shovel  
 HUBER MFG. CO.—Road Rollers  
 J. D. ADAMS CO.—Adjustable Leaning Wheel Graders  
 HIGHWAY—Heavy-Duty Machinery Trailers  
 MUNICIPAL SUPPLY CO.—Oil Distributors  
 GENERAL EXCAVATOR CO.—General Half Yard Shovel  
 NOVO ENGINE CO.—Engines, Hoists and Pumps  
 Member: Associated Equipment Distributors

**Leland Equipment Company**

Tulsa and Oklahoma City, Oklahoma

## Distributors for

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 Excavators, Cranes, Trenching Machines and Back-Fillers  
 INSLEY MFG. CO.—Shovels, Cranes, Backhoes, Concrete Chuting, Towers and Buckets  
 BLAW-KNOX CO.—Bins, Forms, Buckets  
 IOWA MFG. CO.—Rock Crushing Plants  
 SCHRAMM, INC.—Air Compressors, Pneumatic Tools  
 McCLOSKEY—Torches  
 McKiernan-Terry Corp.—Pile Hammers, Steam, Electric and Gasoline Hoists  
 C. H. & E. MFG. CO.—Portable Saw Rigs, Hoists and Pumps, Conveyors, Loaders, Wheelbarrows, Tar Kettles

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 Chicago Pneumatic Tool Co. Pickering Governors  
 Construction Machy. Co. Sidney Steel Scrapers  
 Four Wheel Drive Auto Co. Sterling Wheelbarrows  
 Gallon Iron Works and Mfg. Co. Thew Shovel Co.  
 Foote Bros. Gear and Diamond Iron Works  
 Machines Co. Birdsell Mfg. Co.  
 Littleford Bros. Massey-Harris Co.

Member: Associated Equipment Distributors

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 Tractors — Graders — Harvesters  
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 Killefer Manufacturing Co.  
 Willamette-Ersted Co.  
 Euclid Road Machy. Co.  
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**Howard-Cooper Corporation**

Portland — Seattle — Spokane — Twin Falls

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International Harvester Co. Orton Crane & Shovel Co.  
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 Austin Machinery Corp. Schramm, Inc. (Compressors)  
 Barber-Greene Co. Universal Power Shovel Co.  
 Cleveland Rock Drill Co. Buda Co. (Diesel & Gas Engines)  
 The Osgood Co. (Shovels) Baker Mfg. Co.  
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 Leach Co. Seagrave Corp.  
 Nordberg Mfg. Co. (Symons Crushers) Pacific Goodrich Rubber Co.

Member: Associated Equipment Distributors

**Any errors?**

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## Address

**CONTRACTORS AND ENGINEERS MONTHLY**

470 Fourth Avenue New York

# **BARNARD TRACTOR & EQUIPMENT CO., INC.**

825 Paxton Street, Harrisburg, Pa.

## *Representing*

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 RUSSELL—Drags, Scoops  
 DOMESTIC—Pumps  
 HIGHWAY—Trailers  
 MIAMI—Trailers, Scrapers  
 W-K-M—Pipe Handling Equipment  
 DETROIT—Road and Street Brushes  
 WILLIAMS—Clam Shell Buckets  
 MILBURN—Carbide Lights, Paint Spray Outfits

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Concrete Mixers and Appliances

BLAW-KNOX CO.—Clam-shell Buckets, Steel

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RICHMOND SCREW ANCHOR CO.—Concrete

Specialties

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phragm and Force Pumps

NORTHWEST ENGINEERING CO.—Gasoline

Cranes and Shovels

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CLYDE—Hoisting Engines and Derricks

GARDNER-DENVER—Compressors and Tools

TOLEDO WHEELBARROW CO.—Wheelbarrows

Member: Associated Equipment Distributors



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 Owen Bucket Co.—Clamshell Buckets  
 Lidgerwood Mfg. Co.—Hoists, Winches, Cableways  
 Dravo Equipment Co.—American Tubular Towers  
 Hercules Co.—Road Rollers Union—Pile Hammers  
 International Harvester Co.—Industrial Tractors  
 Allis-Chalmers—Monarch Tractors  
 Bay City Shovel, Inc.—Shovels, Cranes and Cranes  
 W. A. Riddell Co.—Graders, Scrapers & Trucks for Tractors  
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## *Distributors for*

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 McKiernan-Terry Pile Hammers and Derricks  
 LAMBERT-NATIONAL Hoists, Car Pullers, Cableways  
 DAVEY Air Cooled Compressors  
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 TAYLOR-WHARTON Manganese Shovel and Bucket Teeth

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"Everything for Roads"

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 Lakewood Road Equipment  
 Mundy Hoisting Engines  
 American-Gopher Crawler Cranes  
 Red Star Shores & Columns  
 Clamps  
 Sagen Derricks & Winches  
 Berg Concrete Surfaces  
 Williams Trailers  
 Jaeger Pumps  
 Bates Wire Ties & Tying Tools  
 Wyoming "Red Edge" Shovels  
 Jaeger Truck Mixers  
 Lakewood Material Towers  
 Terry Steel Derricks  
 American Revolver Derricks  
 Red Star Barrows & Carts  
 Berg Hi-Way Surfaces  
 Williams Clam Shell Buckets  
 Jaeger Hoists  
 Multiplex Electric Saws  
 Universal Concrete Accessories  
 Reebing Wire Rope

# **LOOK THIS DIRECTORY OVER CAREFULLY**

If you find any errors while checking over this directory will you please advise us at once, because it is our desire to keep it accurate and up-to-date at all times.

CONTRACTORS AND ENGINEERS MONTHLY

470 Fourth Avenue New York

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632 Race Street

Philadelphia

Penna.

## *Representing*

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Modern Equipment Co.

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 GARDNER-DENVER Compressors and Drills  
 HERCULES Road Rollers  
 JACOBSON Concrete Placement Vibrators  
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 Dump and Flat Cars for Construction Work  
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 LINK-BELT—Cranes and Shovels  
 MEAD-MORRISON—Cranes & Shovels  
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 Additional Equipment in Stock:  
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 SULLIVAN MACHY. CO....Compressors and Tools  
 LITTLEFORD BROS....Tar and Asphalt Heating Equipment  
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 General Shovels, Cranes, Skimmer, Back Hoe  
 Multi Foote Pavers  
 Flory Hoists  
 Freeman Turntables  
 Heitzel Steel Road Forms  
 Heitzel Sidewalk & Gutter Forms, Bins and Batchers  
 Sagen Derricks & Elevators  
 Wonder Mixers and Pumps  
 Miles Block Machine  
 Pulsometer Steam Pumps  
 CMC Gasoline Hoists  
 Olmstead Platform Trailers  
 Hayward Clamshell Buckets  
 Choline Plants  
 Marsh-Capron Mixers  
 Mario Mud and Water Pumps  
 Bay City Truck Cranes  
 Halse Loaders, Unloaders and Belt Conveyors  
 Tru-Lay Steel Cable  
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 Jackson—Wheelbarrows, etc.

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5317 No. 2nd St. Philadelphia, Pa.

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 NOVO—Engines, pumps and hoists  
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 CONNERY—Kettles, asphalt heaters  
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 BYERS Shovels and Cranes  
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 CLEVELAND Air Tools  
 DAVEY Air Compressors  
 DOMESTIC Pumps  
 McKiernan-Terry Corp. Pile Hammers  
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 NATIONAL-LAMBERT Hoists, Derricks  
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CONNER  
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—Motor Road Rollers  
—Four-Wheel Drive Trucks  
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—Steel Mules  
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—Drawn Road Graders  
—Air Compressors  
—Gasoline Shovels  
—Culvert Pipe  
—Fire Hose  
—Tar and Heating Kettles  
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*Representing*

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LaPLANT-CHOATE Wagons, Bulldozers and Snow Plows  
ATHEY TRUSS WHEEL Trailers  
EUCLED Wagons and Bulldozers  
BAKER-MANEY Wheel and Roll-Over Scrapers  
WILLAMETTE-ERSTED Tractor Hoists and Logging Equipment  
DAY Crushers  
DAVEY Air Compressors  
W-K-M Pipe Handling Equipment  
KILLEFER Road and Agricultural Tools  
UNIT Shovels  
DOMESTIC Pumps

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1105 S. Main St. Aberdeen, S. Dak.

*Representing*

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EUCLED Rotary Scrapers, Wagons, etc.  
KILLEFER Road Tools  
ATECO Dirt Movers  
DAVEY Compressors  
DAY Crushers  
WAUSAU Snow Plows

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REED-PRENTICE Sawing  
Machines  
HUMDINGER Pumps  
STOVER Engines  
CLIMAX Engine Parts  
GROUNDHOG Tractor  
Scrapers  
UNIVERSAL Gas Electric  
Units

HARDIE Sprayers  
JACOBSEN Power Mowers  
PLANT Mule Tractors  
CLIMAX Motor Parts  
LE ROI Engines and Parts  
DETROIT HARVESTER  
Tractor Mowers  
HARDIE High Pressure  
Pumps  
Rock Crushers and Coal  
Crushers

Industrial and Farm Gasoline Engines

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Insley Mfg. Co.  
E. D. Emrys Co.  
C. H. & E. Mfg. Co.  
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Owen Bucket Co.

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St. Paul Hydraulic Hoist Co.  
Monarch Road Machy. Co.  
Metal Lubricant Co.  
McKiernan-Terry Corp.  
The Geo. Halsey Mfg. Co.  
Baker Mfg. Co.  
Fulton Bag & Cotton Mills  
Happ Bros.  
Erie Road Rollers

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"CATERPILLAR" Road Machinery  
"CATERPILLAR" Combines  
LaPLANT-CHOATE Dump Wagons, Snow  
Plows, Bulldozers and Scrapers  
KILLEFER Scrapers and Road-Rippers  
ATLAS Graders and Scrapers  
WAUSAU Tractor and Truck Snow-Plows  
ROTARY Snow-Plows and Snow-Loaders  
ATECO Dirt Movers, Bulldozers and Scarifiers

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Pittsburgh, Penna.

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Standard Gage Track Shifters Narrow Gage  
Nordberg Railway Track Equipment  
Bay City Tractor Shovels and Cranes  
Bay City Full Revolving Shovels up to 1½ yard  
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The Patterson Gyro-centric Crusher

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Columbia South Carolina

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AMERICAN SAW MILL MACHINERY CO.—Woodworking  
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BAY CITY SHOVELS, INC.—Shovels, Cranes, Draglines  
and Tractor Shovels  
UNION STEAM PUMP CO.—Compressors and Pumps  
SKELTON SHOVEL CO.—Shovels and Scoops  
TOLEDO PRESSED STEEL CO.—"Toledo" Torches  
COLUMBUS IRON WKS. CO.—Grader Blades  
MARION STEAM SHOVEL CO.—Shovels, Gas, Electric,  
Diesel or Steam  
DOMESTIC PUMP CO.—Pumps, Road, etc.  
ATLAS SCRAPER CO.—Rotary Wheel Scrapers  
WELLMAN ENGINEERING CO.—Buckets, Heavy-Duty  
Trailers  
Also  
Road Graders and Rollers, Boilers, Steam and  
Gasoline Engines

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Killefer Mfg. Co.  
LaPlant-Choate Mfg. Co.  
Pioneer Gravel Equip.  
Mfr. Co.  
C. H. & E. Mfg. Co.  
Insley Mfg. Co.

Detroit Harvester Co.  
National Equip. Corp.  
Wausau Snow Plow Co.  
Williamette-Ersted Co.  
Athey Truss Wheel Co.  
Euclid Road Machy. Co.  
Schramm, Inc.  
Cleveland Rock Drill Co.

**W. J. DOORLEY**

Scottdale

Penna.

*Representing*

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Good Roads Equipment Corp.

"All kinds of Asphalt Equipment"

**JEFF HUNT ROAD MACHINERY CO.**

Columbia So. Carolina

*Representing*

"CATERPILLAR" Tractors  
"CATERPILLAR" Road Machinery  
REX Mixers, Pavers, Pumps  
EUCLED Scrapers & Wagons  
KILLEFER Farm Machinery  
Road Tools  
BURCH Loaders & Conveyors  
ORD Finishing Machine  
Buckets  
BLAW-KNOX Road Forms,  
Bins  
"RED EDGE" Shovels  
HVASS Street & Road Equip-  
ment

PIONEER Gravel Equipment  
AUSTIN Trench Machines  
CLYDE Hoists and Derricks  
LaPLANT-CHOATE Dump  
Wagons  
ATHEY Trailers  
HERCULES Red Strand  
Cable  
WIARD Plows, Roadrippers,  
Scrapers  
WILLAMETTE-ERSTED  
Hoists  
P & H Shovels, Cranes, etc.  
ATECO—Scrapers

**WESTERN MATERIAL CO.**

Sioux Falls, S. Dak.

BARNES Pumps  
BLACKHAWK Jacks  
BLAW-KNOX CO.  
BURCH Stone Spreaders  
CLEAVER Tank Car Heaters  
CLYDE Hoists  
CONSTRUCTION MA-  
CHINERY CO.  
DETROIT Mowers  
HERCULES Motors  
HUBER Road Rollers  
INDIANA Trucks  
LENHART Wagons  
LINK-BELT Shovels  
LITTLEFORD BROS.  
McCLOSKEY Torches  
M & M Form Devices  
MADSEN Pre-Mixing Plants

NOVO Engines  
PAGE Buckets  
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PIONEER Gravel Equipment  
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ROTARY Snow Plows  
ROSCO Oil Distributors  
RUSSELL Plows & Scrapers  
SARGENT Derricks  
SOLVAY Calcium Chloride  
STERLING Wheelbarrows  
VULCAN File Hammers  
SCHRAMM, INC. Air Comp.  
WOOD "Molly" Shovels  
WAUSAU Snow Plows  
YELLOWSTRAND Cable

Member: Associated Equipment Distributors

**ENSMINGER AND COMPANY**

75-77 Hazle Street Wilkes-Barre, Pa.

*Representing*

JAEGER Concrete Mixers, Towers, Pumps  
LINK-BELT Shovels, Cranes, Backfillers  
BAY CITY Tractor Shovels  
SCHRAMM, INC. Air Compressors  
SOUTH BEND Lathes  
MUNDY Hoisting Equipment  
BLAW KNOX Buckets  
DOBBIE Derricks and Winches  
NEW HOLLAND Rock Crushers  
HIGHWAY SERVICE Chip Spreaders  
JACKSON Wheelbarrows and Concrete Carts  
AMERICAN Saw Mill Machinery  
ADAMS, Graders  
REED-PRENTICE Timber Saws  
CLEVELAND Rock Drills, Air Tools  
SHUNK MFG. CO.—Tractor Dump Wagons  
HOTCHKISS Road Forms

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SPARTANBURG, S. C.

CUMMER Asphalt Plants  
BUFFALO-SPRINGFIELD  
Rollers, Scarifiers  
BUCYRUS-ERIE Shovels  
MULTIFOOTE Pavers  
BUTLER Bins and Hoppers  
HUG Dump Trucks  
BARBER-GREENE Loaders,  
Conveyors and Ditchers  
LAKEWOOD Finishers, Sub-  
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JAEGER Mixers and Pumps  
INGERSOLL-RAND CO.  
LITTLEFORD Asphalt Tools  
Member: Associated Equipment Distributors

FREEMAN Turntables  
HELTZEL Road Forms,  
Trailers and Bridges  
WESTERN Wheeled Scrap-  
ers, Fronts, Drags, Plows  
DOMESTIC Pumps & Hoists  
SASGEN Derricks  
SHUNK MFG. CO. Blades  
WYOMING Shovels  
STERLING Wheelbarrows  
CLEVELAND Torches  
WILLIAMSPORT Wire Rope  
BAKER Bulldozers  
LINDE Carbide Lights  
BERG Concrete Finishers  
PARKS Saw Rigs  
Member: Associated Equipment Distributors

**NIXON-HASSELLE CO.**Contractors' Equipment  
CHATTANOOGA TENNESSEE*Representing*

BLAW-KNOX Buckets and Forms  
DOBBIE Derricks  
MUNDY Hoists  
EASTON Dump Bodies, Cars and Track  
BARBER-GREENE Loaders and Conveyors  
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REX Mixers, Pavers and Pumps  
NORTHWEST Cranes and Shovels  
ARCHER Tower and Spouting Equipment  
VULCAN Gasoline Locomotives  
McCORMICK-DEERING Tractors  
WARCO Graders  
TRACKSON Tracts, Cranes, etc.  
NEWPORT Culvert Pipe  
Also Wheelbarrows—Carts—Renderers—Cutters—Shovels—  
etc.

Member: Associated Equipment Distributors

### R. L. HARRIS, Inc.

709-15 Cooper St. Knoxville, Tenn.

#### Representing

"CATERPILLAR" Tractors and Road Machinery  
 ATHEY Truss Wheel Wagons  
 BAKER-MANNEY Self Loading Scrapers  
 BUCYRUS-ERIE Shovels and Cranes  
 CHICAGO-PNEUMATIC Air Compressors  
 DOMESTIC Pumps and Hoists  
 EUCALID Bulldozers  
 RUBER Road Rollers  
 HELTZEL Forms, Bins and Batches  
 UNIVERSAL Rock Crushers  
 WILLIAMS Buckets and Trailers

### BROWNING-FERRIS MACHY. CO.

205 Exposition Ave. Dallas, Texas  
 Houston—Austin—San Antonio

#### Representing

Buffalo-Springfield Roller Co. (Dallas & Amarillo)  
 Barber-Greene Co. (Dallas & Amarillo)  
 Lakewood Engineering Co.  
 Sterling Wheelbarrow Co.  
 Jaeger Machine Company  
 Heltzel Steel Form & Iron Co.  
 Ingersoll-Rand Co.  
 Foote Co.—Pavers  
 Homelite Corp.—Pumps  
 Littleford Bros.  
 Universal Crushers  
 Thew Shovel Co.  
 Trackson Co. Crawlers, Hoists  
 McCormick-Deering Tractors  
 Cleveland Crawler Tractors

### ALAMO IRON WORKS

130 Santa Clara St., San Antonio, Tex.

Koehring Shovels, Cranes  
 Insley Shovels, Cranes  
 Koehring Pavers, Mixers  
 Smith Pavers, Mixers  
 Parsons Ditchers, Backfillers  
 Koehring Dumpers  
 Tel-smith Crushers, Screens  
 Schramm Portable Compressors  
 Gardner Stationary Compressors  
 Orr and Sambower Hoists  
 C. H. & E. Saw Rigs  
 H & A Woodworking Machinery  
 Sidney Woodworking Machinery  
 Hais Loaders and Conveyors  
 Butler Bins  
 Williams Buckets and Heavy Duty Trailers  
 Red Star Barrows  
 Mully Shovels  
 Evinrude Pumps  
 Waugh Rock Drills  
 Black & Decker Electric Hammers  
 Black & Decker Electric Saws  
 Williamsport Wire Rope

### CHOCTAW CULVERT AND MACHINERY COMPANY

Second & Butler Sts. Memphis, Tenn.

#### Representing

Jaeger Machine Co.  
 Sterling Wheelbarrow Co.  
 Littleford Brothers  
 Buffalo-Springfield Roller Co.  
 Lakewood Engineering Co.  
 The Foote Co.  
 Owen Bucket Co.  
 Butler Bin Co.  
 Beach Mfg. Co.  
 Northwest Eng'g. Co.  
 Smith Engineering Works  
 Clyde Iron Works  
 Sagen Derrick Co.  
 Gardner-Denver Co.  
 E. D. Emyre Co.  
 Drake-Williams-Mount Co.  
 Le Roi Company  
 Trackson Company  
 Beach Bros.

Member: Associated Equipment Distributors

### CLARK & BURROWS, Inc.

3600 Commerce St., Dallas, Texas

#### Representing

KOEHRRING—Pavers, Mixers, Power Shovels, Cranes, Draglines, Dumpers  
 INSLEY—Excavators, Concrete Placing Equipment, Cars, Buckets, Derricks, Shoulder Finisher  
 T. L. SMITH—Tilting and Non-Tilting Mixers, Pavers  
 PARSONS—Trench Excavators, Backfillers, Trailers  
 C. H. & E.—Portable Saw Rigs, Pumps, Hoists  
 KWIK-MIX—Mixers; Concrete, Plaster and Mortar  
 C. S. JOHNSON—Material Storage Bins and Batches  
 HERCULES—Rollers, Crawl Tractor Roller  
 METAL FORMS CORP.—"Metaforms"  
 CONSOLIDATED IRON-STEEL MFG. CO.—Cleveland  
 Road Torch  
 WORTHINGTON—Portable Compressors and Air Tools  
 A Complete Line of Construction Equipment

### LEWTER F. HOBBS, INC.

"Any machine for the Contractor since 1906"

NORFOLK, VIRGINIA

KNICKERBOCKER Mixers  
 STROUDSBURG Hoists  
 CHICAGO Compressors  
 U. S. ASPHALT Plants  
 FAIRFIELD Conveyors  
 FARQUHAR Boilers  
 FREEMAN Turntables

Other Well Known Lines

### NASHVILLE TRACTOR & EQUIPMENT CO.

322 Fifth Ave., S. Nashville, Tenn.

#### Representing

CATERPILLAR Tractors and Road Machinery  
 EUCALID Wagons & Scrapers  
 GARDNER-DENVER Air Compressors and Tools  
 SPEEDER Shovels & Cranes  
 LA PLANT-CHOATE Bulldozers, Wagons & Scrapers  
 IOWA MFG. COMPANY Crushers, Plants, Mixing Plants  
 KILLEFER Scrapers  
 GENERAL Wheelbarrows, Scrapers and Blades  
 HAUSS Loaders & Conveyors  
 WILLIAMS Buckets and Trailers  
 ATHEY TRUSS WHEEL Wagons  
 DOMESTIC Pumps & Hoists  
 TOLEDO Torches  
 BURTON Explosives  
 CARTER "Hundinger" Pumps

### Steel Products Corporation

750-760 First Natl. Bank Bldg.

P. O. Box 23

El Paso, Texas

#### Exclusive Distributors

CEDAR RAPIDS Crushers, Screening Plants, Washing Plants and Oil Road Mix and Pre-Mix Plants  
 CHAUSSE Asphalt Kettles

### GRAHAM B. BRIGHT

1106 Electric Bldg. Richmond, Va.

#### Representing

Acme Road Machinery Co.  
 American Wire Fence Co.  
 Bay City Foundry & Machine Co.  
 The Byers Machine Co.  
 J. C. Cleaver Company  
 Easton Car & Construction Co.  
 Davey Compressor Co., Inc.  
 E. D. Emyre & Company  
 George Hais Mfg. Company  
 The Parsons Company  
 MacWhyte Company  
 Milwaukee Locomotive Mfg. Co.  
 Smith Engineering Works

### Wilson-Weesner-Wilkinson Co.

Nashville Tennessee

#### NATIONAL EQUIPMENT CO.

Koehring Co.  
 Insley Mfg. Co.  
 Allis-Chalmers Mfg. Co.  
 Blaw-Knox Co.  
 C. H. & E. Mfg. Co.  
 Clyde Iron Works  
 Good Roads Machy. Co.  
 The Parsons Co.  
 T. L. Smith Co.  
 Ingersoll-Rand Co.  
 Littleford Bros.  
 McKiernan-Terry Corp.  
 Western Wheeled Scraper Co.  
 Wyoming Shovel Works

Warehouse Stocks of Service  
 NASHVILLE — KNOXVILLE  
 MEMPHIS

Member: Associated Equipment Distributors

### R. B. EVERETT & CO.

3112-18 Harrisburg Blvd. Houston, Texas

BLAW-KNOX Road Plant Equip., Bins & Churn Shell Buckets  
 CHAIN BELT Concrete Mixers, Pumps, etc.  
 CLYDE Hoisting Machy.  
 "P. & H." Gasoline Cranes  
 UNIVERSAL Form Clamps  
 MCKIERMAN-TERRY File Hammers, etc.  
 NOVO Engines, Hoists  
 CONNERY Asphalt Kettles, Tools  
 WYOMING Shovels, Picks  
 GALION Graders & Main Lanes  
 SAUERMAN Caisways  
 CLEVELAND Wheelbarrows  
 BATES Wire Ties  
 PULSOMETER Steam Pumps  
 PATENT Safety Swinging Scaffolding  
 TRULAY Wire Rope  
 BUFFALO - SPRINGFIELD Road Rollers  
 SULLIVAN Compressors  
 STROUD Elevating Graders  
 ETNYRE Asphalt Distributors

Member: Associated Equipment Distributors

### EARNEST BROS.

14 N. 7th Street Richmond, Va.

#### Representing

KOEHRRING—Mixers, Pavers, Shovels, Mud Jack, Sub-grade Planer  
 T. L. SMITH CO.—Mixers, Pavers, Truck Mixers  
 C. H. & E.—Saw Rigs, Pumps, Hoists, Mortar Mixers, Material Elevators, 6" Ditcher  
 INSLEY—Shovels, Cranes, Concrete Chuting Plants, Towers, Buckets, Derricks  
 JOHNSON—Steel Bins, Batches, Bulk Cement Plants, Ready Mix Plants  
 OWEN—Clamshell Buckets, Rehandling and Digging  
 DOW—Calcium Chloride  
 PORTABLE POWER TOOL CORP.—Hand Electric Saws and Drills

### J. W. BARTHOLOW COMPANY

Machinery, Contractors' Equipment, Supplies

1221 So. Lamar St. Dallas, Texas

RANSOME Mixers, Chutes  
 CLYDE Hoists & Derricks  
 BLYSTONE Plaster Mixer  
 DOMESTIC Pumps  
 WYOMING Shovels, Picks  
 GENERAL Wheelbarrows  
 WIARD Pliers  
 CYCLONE Drills  
 SULLIVAN Air Compressors  
 MCKIERMAN-TERRY File Hammers  
 ROOS Shores  
 NORTHWEST Cranes  
 BLAW-KNOX Buckets  
 RANSOME Pavers  
 ORD Concrete Finishers  
 ACME Rollers, Graders  
 HAUSS Loaders  
 BLAW-KNOX Bins, Forms  
 TELSMITH Crushers, Etc.  
 AUSTIN Ditchers  
 BAY CITY Truck Cranes  
 FARQUHAR Boilers

### F. W. GARTNER COMPANY

1010 Milby Street Houston, Texas

#### Contractors Equipment

RANSOME Mixers & Pavers  
 JOHNSON Bins, Batches  
 BARNES Pumps  
 HAUSS Loaders, Conveyors  
 KOPPEL Cars  
 MUNDY Hoists Equipment  
 BLYSTONE Mixers  
 SCHRAMM Compressors  
 SASGEN Concrete Equip.  
 BAY CITY Cranes, Shovels  
 PARSONS Trenchers, Backfillers  
 CLEVELAND Air Tools  
 PAGE Dragline Buckets  
 HAYWOOD Clamshell Buckets  
 ACME Road Rollers, Graders  
 ACME Crushers  
 CLIMAX Gasoline Engines  
 LE ROI Gasoline Engines  
 ROGERS Trailers  
 DOBBIE Derricks  
 MACLEOD Kettles  
 BAY CITY Truck Cranes

### THE C. H. JONES COMPANY

Construction and Industrial Equipment

134-140 Pierpont Ave. Salt Lake City, Utah

#### Representing

JAEGER MACHINE CO.—Concrete Mixers, Hoists & Pumps  
 GALION IRON WORKS & MFG. CO.—Road Graders and Rollers  
 BAY CITY SHOVELS, INC.—Power Shovels, Draglines and Cranes  
 OHIO POWER SHOVEL CO.—"101" Shovels, Draglines and Cranes  
 DIAMOND IRON WORKS, INC.—Gravel Crushing and Screening Plants  
 THE FOOTE CO., INC.—Multifoote Paving Mixers  
 LINK BELT CO.—Elevating and Conveying Machinery  
 CLEVELAND TRACTOR CO.—Caterpillar Crawler Tractors  
 CHICAGO AUTOMATIC CONVEYOR CO.—Portable Belt and Drag Conveyors  
 BAKER MFG. CO.—Truck and Tractor Snow Plows

**PHILLIPS MACHINERY CO.**

900 East Cary St. Richmond, Va.

Representing  
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 CLYDE SALES CO.  
 DEWALT PRODUCTS CORP.  
 HARNISCHFEGER SALES CORP.  
 ERIE STEEL CONSTRUCTION CO.  
 SAUERMAN BROTHERS, INC.  
 CHICAGO PNEUMATIC TOOL CO.  
 DRAVO EQUIPMENT CO.  
 STEPHENS-ADAMSON MFG. CO.  
 METAFORMS CORPORATION  
 ROGERS BROTHERS CORP.  
 GENERAL EXCAVATOR CO.  
 AEROL BURNER CO.  
 BARNES MANUFACTURING CO.  
 MANITOWOC ENGINEERING WORKS  
 BRODERICK & BASCOM ROPE CO.  
 Also many other lines of Contractors' Equipment

**VIRGINIA TRACTOR CO., Inc.**

916 North Boulevard Richmond, Va.

Dealers in Equipment, Attachments  
 and Implements for use with

**"CATERPILLAR" Tractors****"CATERPILLAR" Graders****"CATERPILLAR" Combines****CONSTRUCTION EQUIPMENT CO.**

1118-1124 Ide Ave., Spokane, Wash.

Archer Iron Works  
 Beebe Bros.  
 Biystone Mfg. Co.  
 Broderick & Bascom Rope Co.  
 Buffalo-Springfield Roller Co.  
 Butler Bin Co.  
 Chain Belt Co.  
 D-A Lubricant Co.  
 Detroit Graphite Co.  
 DeWalt Products Co.  
 Elgin Sales Corp.  
 Fate-Root-Heath Co.  
 Climax Eng. Co.  
 Ideal Power Lawn Mower Co.  
 Le Rol Co.  
 Linde Air Products Co.  
 Fairbanks, Morse & Co.  
 M. & M. Wire Clamp Co.  
 Niagara Mfg. Co.  
 Novo Engine Co.  
 St. Regis Paper Co.  
 Sagen Derrick Co.  
 Sheldon Mfg. Co.  
 Speeder Machy. Corp.  
 Sterling Wheelbarrow Co.  
 Sullivan Machinery Co.  
 Sunbeam Mfg. Co.  
 Templeton, Kenly Co.  
 Kalamazoo Railway Supply Co.  
 Williams Buckets & Trailers  
 Williamette-Ersted Co.  
 Wyoming Shovel Works  
 Young Iron Works  
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 McKiernan-Terry Corp.  
 Deister Concentrator Co.  
 National Wire Cloth Co.  
 Williams Buckets and Trailers  
 Boston Woven Hose & Rubber Co.  
 Sprague Electric Hoists Div.  
 Traylor Engrg. & Mfg. Co.  
 A. Leschen & Sons Rope Co.  
 and other leading manufacturers

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 General Excavator Co.  
 Bay City Shovels, Inc.  
 Smith Engineering Works  
 Jaeger Machine Co.  
 Superior Engine Co.  
 Hercules Motors Corp.  
 DeLaval Steam Turbine Co.  
 General Electric Co.  
 John A. Roebling's Sons' Co.  
 Cleveland Wheelbarrow Co.  
 Midwest Locomotive Works

**RICHMOND MACHINERY & EQUIP. CO.**

Broadway Bank &amp; Trust Bldg. Richmond, Va.

Representing  
 J. I. Case Co.  
 Cleveland Rock Drill Co.  
 Connery and Co.  
 Construction Machinery Co.  
 Gallon Iron Works and Manufacturing Co.  
 Good Roads Machinery Co.  
 Manitowoc Engineering Works  
 Mead-Morrison Manufacturing Co.  
 Page Steel and Wire Co.  
 Schramm Incorporated  
 Virginia Metal Manufacturing Co.  
 A. B. Farquhar Co., Ltd.

**Southern Machinery and Supply Co.**

Roanoke Virginia

**"All Kinds of Machinery"**

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 The Osgood Co.  
 Vulcan Iron Works  
 Chain Belt Co.  
 The Novo Engine Co.  
 Austin Machinery Corp.  
 George Haiss Manufacturing Co.  
 Heltzel Steel Form & Iron Co.  
 Littleford Bros.  
 Cleveland Tractor Co.  
 Linn Manufacturing Corp.  
 Gruendler Crusher & Pulv. Co.  
 Columbus Conveyor Co.  
 Power Manufacturing Co.  
 Gardner-Denver Co.  
 Contractors' Equipment in Stock in our Roanoke Warehouse

**HOFIUS-FERRIS EQUIPMENT CO.**

728-802 Mallon Avenue

Spokane Washington

Road Building, Logging and Power  
 Farming Equipment

Representing  
**CATERPILLAR TRACTOR CO.**  
 Tractors — Graders — Harvesters

**SHOP — SERVICE****SMITH-COURTNEY COMPANY**

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Representing  
 JAEGER—Mixers, Hoists and Pumps  
 WORTHINGTON—Air Compressors  
 BROWNING—Cranes and Shovels  
 CLEVELAND—Rock Drills  
 HOMELITE—Portable Pumps  
 CYCLONE—Road Guard  
 LAKEWOOD—Towers and Paving Equipment  
 SKILSAW—Electric Saws  
 BEEBE—All Steel Hand Hoists  
 Complete Stock of Contractors' Supplies and Accessories

**GEIJSBEEK ENGINEERING CO.**

Arctic Building Seattle, Wash.

Representing

HANSON Excavators  
 FATE-FOOT-HEATH Crushers  
 EAGLE Sand and Gravel Plants  
 HARDINGE Grinding Mills  
 NORTH AMERICAN REFRAC-TORIES CO.—Fire Brick  
 Pumps, Compressors, Drilling Tools  
 Contractors' Scientific Instruments

**Bluefield Supply Company**

Bluefield W. Va.

Representing

Blaw-Knox Co.  
 Ingersoll-Rand Co.  
 National Equip. Corp.  
 Novo Engine Co.  
 Johns-Manville Corp.  
 Cleveland Tractor Co.  
 American Saw Mill Machy. Co.  
 A. B. Farquhar Co., Ltd.  
 Goodyear Rubber Co.  
 E. I. DuPont de Nemours & Co.  
 Williamsport Wire Rope Co.  
 General Electric Co.  
 Brookville Locomotive Co.

Authorized Waukesha Service

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anything in this Directory that is not accurate and up-to-date. Therefore, if you find any errors or corrections we hope you will let us know about them. Thank you.

**CONTRACTORS AND ENGINEERS MONTHLY**

470 Fourth Ave. New York

**PACIFIC HOIST & DERRICK CO.**

Machinery and Equipment

3200 4th So. Seattle, Wash.

Representing

NORTHWEST—Gas and Electric Shovels, Cranes and Draglines  
 BUHL—Air Compressors  
 TWIN DISC—Clutches for all purposes  
 PAGE—Scraper Buckets, Diesel Draglines  
 MINNEAPOLIS—"Twin City" Gas Engines  
 CLIMAX—Gasoline Engines  
 WISCONSIN—Gasoline Engines  
 MIDWEST—Locomotives  
 DAKE ENGINE CO.  
 PIONEER—Gravel Equipment  
 ISAACSON IRON WORKS—Buckets  
 Member: Associated Equipment Distributors

**GENERAL EQUIPMENT CO., Inc.**

414 No. Fourth St. Clarksburg, W. Va.

Representing

CATERPILLAR TRACTOR CO.—Tractors, Graders  
 DETROIT HARVESTER CO.—Street Sweepers, Mowers  
 KILLEFER MFG. CORP.—Plows and Discs  
 HUBER MFG. CO.—Gasoline Rollers  
 ATHEY TRUSS WHEEL CO.—Crawler Wagons  
 GARDNER-DENVER CO.—Compressors and Jackhammers  
 STERLING WHEELBARROW CO.—Wheelbarrows  
 BLAW-KNOX CO.—Road Form, Batcher, Bins, etc.  
 LA PLANT-CHOATE MFG. CO.—Bulldozers Snow Plows  
 AMERICAN CABLE CO.—Tru-Lay Rope  
 BURCH CORP.—Conveyors, Car Unloaders and Spreaders  
 NORTHWEST ENGINEERING CO.—Gasoline Shovels  
 BARNES MFG. CO.—Pumps  
 JAEGER MACHINE CO.—Concrete Mixers  
 HERCULES POWDER CO.—Explosives & Blasting Supplies  
 EUCLID ROAD MACHY CO.—Earth Moving Equipment.  
 DAY—Crushers



### BAILEY-TREEN MACHINERY CO.

20th St. & B. & O. R. R. Huntington, W. Va.

Caterpillar Tractor Co.  
Athey Truss Wheel Co.  
Allsteel Products Mfg. Co.  
LaPlant-Choate Mfg. Co.  
Northwest Engineering Co.  
Euclid Road Machinery Co.  
Detroit Harvester Co.  
Willamette-Ersted Co.  
Gardner-Denver Co.  
Huber Roller Co.  
W-K-M Co., Inc.  
Holtel Steel Form & Iron Co.  
Universal Crusher Co.  
Burch Corp.  
Foots Co.  
American Tractor Equip. Co.  
Davey Compressor Co.

### BOEHCK EQUIPMENT COMPANY

2404 W. Clybourn St., Milwaukee, Wis.

#### Representing

Barber-Green Company  
Byers Machine Company  
Jaeger Machine Company  
LeRoi-Rix Air Compressors  
A. Streich & Brothers Co.  
Williams Buckets & Trailers  
Kerner Automatic Hoist Co.  
McKiernan-Terry Corp'n  
Huber Mfg. Company  
W. Toepler & Sons Co.  
Symons Clamp & Mfg. Co.  
J. P. Curry Mfg. Company  
Jones Superior Machine Co.  
Sagen Derrick Company  
Aeril Burner Co., Inc.  
Fairbanks, Morse & Co., Inc.  
Universal Form Clamp Co.  
Moloch Foundry & Mach. Co.  
J. S. Mundy Hoisting Engine Co.

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West Allis

Wisconsin

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Belmont Packing & Rubber Co.  
Whiting Leather & Belting Co.

Complete line of Concrete Product Equipment.  
Block, Brick and Tile Machines.

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P. O. Box 736 Huntington, W. Va.

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ALLIS-CHALMERS  
Tractors  
J. D. ADAMS CO. Graders  
THE HUG CO. Dump Trucks  
SULLIVAN Compressors,  
Tools  
DOMESTIC Pumps and  
Hoists  
BLAW-KNOX Bins, Batches  
and Forms  
A. W. FRENCH CO. Finish-  
ing Machines  
CONNER Asphalt Heaters  
GOODALL Rubber Hose  
BUFFALO-SPRINGFIELD  
Rollers  
GEO. D. WHITCOMB Loco-  
motives  
WESTERN Dump Cars  
HAZARD Wire Rope  
M-W Lubricants  
W. K. M. COMPANY INC.  
NATIONAL CARBON CO.  
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Drake-Williams-Mount Co.  
Flexible Rd. Joint Machine Co.  
Heltzel Steel Form & Iron Co.  
Leach Company  
Manitowoc Engineering Works  
Mead-Morrison Mfg. Co.  
Schramm, Inc.  
Sterling Machinery Corp.

### HUNTER MACHINERY COMPANY

327 So. 16th St. Milwaukee, Wis. 627 E. Mifflin St. Madison, Wis.

ARCHER Towers  
BATES Wire Ties  
BLAW-KNOX Bins, Forms  
CHAIN BELT Mixers, Pav-  
ers, Pumps, Truck Mixers,  
Saw Rigs  
CLYDE Hoists, Derricks  
HOMELITE Pumps  
LESCHEN Wire Rope  
NORTHWEST Shovels,  
Cranes  
ORD Finishing Machines  
PULSOMETER Steam Pumps  
ROSS Snow Plows  
SASGEN Derricks, Winches  
SAUERMAN Draglines, etc.  
SULLIVAN Compressors,  
Tools

"Caterpillar" Dealers for Southern Wisconsin  
Trackson Company  
Euclid Road Machy. Co.  
Blaw-Knox Ateco Div.  
LaPlant-Choate Mfg. Co.

Also Handle "Cat." Attach-  
ments, Wagons, Etc., Made  
by  
Member: Associated Equipment Distributors

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520 No. Main St. Fond du Lac, Wis.

#### Representing

Speeder Machinery Corp.  
W. A. Riddell Co.  
Sauerman Bros., Inc.  
Wehr Co.  
Trackson Co.  
Willamette-Ersted Co.  
Fordson Distributor in Wisconsin,  
Illinois, Iowa, Indiana and Michigan

### CUNNINGHAM-ORTMAYER CO.

429 W. Michigan St. Milwaukee, Wis.

#### Distributors

BUTLER—Bins and Measuring Devices  
CAREY—Elastic Joints and Building Materials  
C. H. & E. Pumps, Hoists and Saw Rigs  
CONCRETE ENGR. CO.—Reinforcing Steel  
DOWFLAKE—Calcium Chloride  
DAVENPORT—Sheepfoot Rollers and Snow Plows  
INGERSOLL-RAND—Compressors, Concr. Breakers, Diggers  
LAKEWOOD—Road Finishers, Subgraders, Chuting Equip.  
LITTLEFORD—Road and Street Maintenance Equipment  
KOEHRING—Shovels, Pavers, Dumpers and Mud Jacks  
PARSONS—Ditchers and Trenchers  
SERVICE—Hand Shovels, Scoops and Spades  
SMITH, T. L.—Pavers and Mixers  
STERLING—Wheelbarrows  
TUFCOTE—Waterproof Paper  
WEHR—Rollers, Power Graders  
WILLIAMS—Form Clamps and Accessories  
Member: Associated Equipment Distributors

### W. A. NELSON EQUIPMENT CO.

534 No. 25th St. Milwaukee, Wis.

#### Representing

WORTHINGTON—Portable Air Compressors,  
Air Tools  
CONSTRUCTION MACHINERY CO.—Pumps,  
Hoists, Saw Rigs, Material Elevators  
NOVO—Engines, Pumps, Hoists  
STERLING—Wheelbarrows  
ERIE—Bins, Clamshell Buckets

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### CONTRACTORS AND ENGINEERS MONTHLY

470 Fourth Ave. New York

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3841 Wisconsin Avenue

Milwaukee Wisconsin

Representing in the State of Wisconsin and Upper Peninsula of Michigan:

ALLIS-CHALMERS — Industrial and Track Type Tractors, Power Operated Elevating and Blade Graders, Motor Patrol Graders, Track Type Wagons  
PIONEER—Gravel Equip.  
DROTT—Buildings & Searifiers  
WAUSAU—Snow Plows  
TWO-WAY-DRIVE—Super Trucks  
DAVEY Air Compressors  
KINNEY Road Oilers  
TORO Highway Mowers  
HERCULES Road Rollers  
HIGHWAY Trailers  
CLEVELAND Rock Drills  
WILLETT Truck Blades  
HANDY SANDY Sand Spreaders  
SHAW ENOCHS Pull Type Graders

### ROBERT T. TWEDT CO., INC.

15th St. and Pioneer Ave. Cheyenne, Wyo.

#### Representing

"CATERPILLAR" Tractors and Graders  
LAFLANT-CHOATE Snow Removal and Dirt Moving Equipment  
KILLEFER Scrapers, Fresno & Road Rippers  
ATHEY TRUSS Wheel Wagons  
EUCLID Road Machinery  
MACWHYTE Wire Rope  
OIL FIELD Hoists and Equipment  
GOOD ROADS Champion Sand & Gravel Equip.  
WIARD Road Plows  
WAUSAU Bulldozers, Snow Plows and Back Fillers  
SPEEDER Draglines and Shovels  
MASTER Loaders and Rotary Scrapers  
DETROIT Mowers, Sweepers & Snow Brushes  
WILLIAMS Buckets and Heavy Duty Trailers

## Three Lists Worth Consulting:

Valuable Catalogs for Contractors . . . pages 43 and 44  
Equipment Distributors' Directory . . . pages 50 to 69  
Engineers' Directory . . . pages 46 to 49

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### CONTRACTORS AND ENGINEERS MONTHLY

470 FOURTH AVENUE

NEW YORK

# CANADA

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British Columbia  
Manitoba  
Ontario  
Quebec  
Saskatchewan

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Page Engineering Co.  
B. Greening Wire Co., Ltd.  
London Concrete Mch. Co., Ltd.  
Iowa Mfg. Co.  
Herbert Morris Crane & Hoist Co. Ltd.  
Worthington Pump & Mch. Corp.  
Templeton, Kenly & Co., Ltd.  
Federal Belting & Asbestos Co., Ltd.  
Moon Manufacturing Co.  
Factory Equipment Ltd.  
J. L. Goodhue & Co., Ltd.  
Jeffrey Manufacturing Co.  
Canadian Hoists & Conveyors, Ltd.  
Dominion Rd. Machy. Co., Ltd.

## BROWN, FRASER & CO. Ltd.

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*Representing*  
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CEDAR RAPIDS Gravels Plants, Crushers  
CLETRAC Tractors  
GALION Road Machinery  
HAISS Mechanical Loaders and Excavators  
HERCULES Engines and Power Units  
HUMDINGER Pumps  
PLYMOUTH Gas and Diesel Locomotives  
SAUERMAN Scrapers and Excavators

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*BRITISH COLUMBIA DISTRIBUTORS FOR*  
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Tractors—Graders—Combines  
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Day Pulverizer Co.

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LIMITED, Ontario  
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RANSOMES SIMS & JEFFERIES, Ltd.—Lapworth, Eng.—Lawn Mowers  
DENNIS BROS., LTD., Guilford, Eng.—Lawn Mowers  
WOODALL - DUCKHAM  
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CO., LTD., London, Eng.—Vertical Retort Ovens  
WITTE ENGINE WORKS—Kansas City, Mo.—Gasoline Saws, Pumps & Engines  
BUCYRUS-ERIE CO.—So. Milwaukee, Wis.—All types of Excavators  
CONSTRUCTION MACHINERY CO.—Waterloo, Ia. Concrete Mixers, Hoists  
CANADIAN JOHNSON MOTOR CO., Peterboro, Ontario—Motor Scythes and Johnson Tremble Fire Fighting Pumps

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KNOX—Valves, Hose Coughs, etc.  
S. K. F.—Drill Steel, Special Steels  
BUCYRUS-ERIE—Power Shovels, Draglines, Excavators  
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STANDARD—Diamond Drills  
McKIERNAN-TERRY—Pile Hammers, Core Drills  
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*Representing*  
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MOVO Gasoline Engines  
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**EVERYTHING FOR THE CONTRACTOR**

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STERLING — Hoists and Air Compressors  
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MAINE—Snow Plows for Tractors and Trucks  
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SHUNK—Graders and Drag Blades, etc.

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Dredging Machinery  
Excavators and Graders  
Hoists and Loaders  
BUCYRUS-ERIE CO. Shovels, all types  
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Locomotive Cranes  
Pile Drivers & Hammers  
Power Drag Scrapers  
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Road Rollers  
Tractors  
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Track Shifters  
Washing Plants

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The Buda Company  
Highway Trailer Co.  
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Insley Manufacturing Co.  
Euclid Road Machy. Co.  
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## WE WOULD LIKE TO HAVE YOU HELP US

make this Directory of Dealers in construction equipment the most complete and accurate of its kind. Therefore, we would greatly appreciate any suggestions or corrections that you may have to offer.

## CONTRACTORS AND ENGINEERS MONTHLY

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## THE ALBERT OLSON CO. LTD.

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"CATERPILLAR" Combined Harvesters  
TONCAN Metal Culverts  
PIONEER Gravel Equipment  
LENHART Dump Wagons  
LAPLANT-CHOATE Equipment  
KILLEFER Scrapers  
EUCLID Equipment  
P. & H. Shovels and Cranes

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Hughes-Keenan Co. Mules  
Trackson Co. Olson Extensions  
W. A. Riddell & Co. Rock Hand Hoists  
Universal Power Perry Scraper Co.  
Shovel Co. Kingham Trailers  
Taco Governor Brookville Locomotives  
Fordson Tractors General Excavator Co.  
Sargent Snow Plows Trojan Road Rippers  
Osgood Co. Bates Tractors  
Trucktor Corp. Willette Mfg. Co.

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**(Export Offices: Nogales, Arizona)**  
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"CATERPILLAR" Harvesters  
"CATERPILLAR" Road Machinery  
WILLIAMETTE-ERSTED Hoists  
VENTURA Scarifiers and Implements  
ATECO Bulldozers  
BEAN Implements  
TOWNER Tools and Implements

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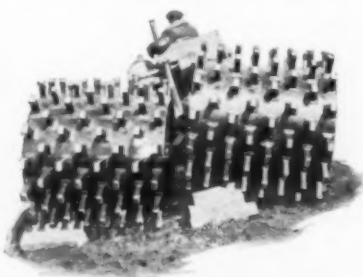
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adaptability and eco-  
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## Oscillating Rollers . . . an Exclusive Euclid Feature

ON the Euclid Twin Roller each roller frame is attached to the cross-member of the drawbar so as to permit independent rotation and oscillation of the rollers, thus conforming to the contour of the ground level, crowned, or at angles.



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HERE'S a tool that eliminates the need for a power roller. Packing with a pressure of approximately 220 pounds to the square inch Euclid Tampers reduce to a minimum the voids and poorly packed spots often left by power rollers. This is due to the sheep foot design of the tamper teeth which exert greater pressure than is possible with a power roller. Euclid Tampers roll easily, due to proved bearing design and are attached to tractor by the original Euclid Drawbar Spring-mounted Clevis. This eliminates rigid direct jerk and shock when starting. The Rolls are built from high grade steel and the self cleaning forged steel teeth are firmly welded to the heavy outer surface of the roller. Ask your Franchised Euclid Dealer for complete data as to sizes available in Euclid Tampers.

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**83 Horsepower at the Draw-bar**

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